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ADDRESS ALL COMMUNICATIONS TO

THE EXCAVATING ENGINEER PUBLISHING COMPANY

BRADLEE VAN BRUNT, Manager and Editor

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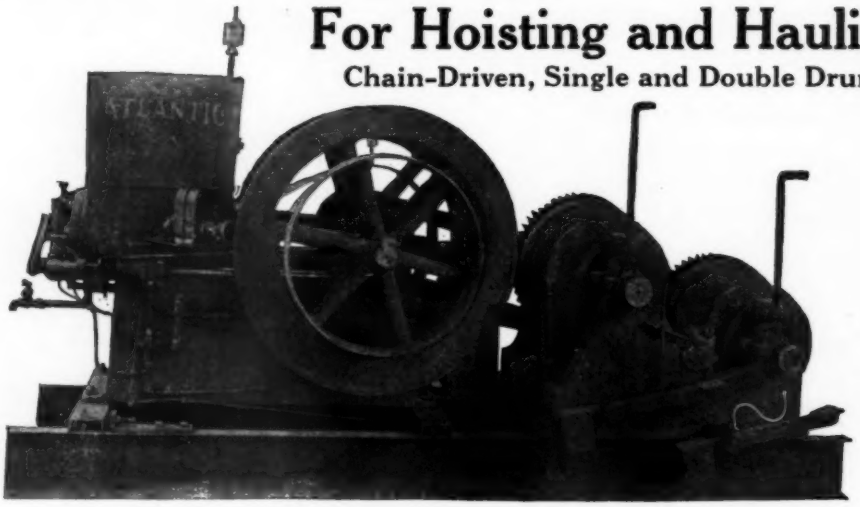

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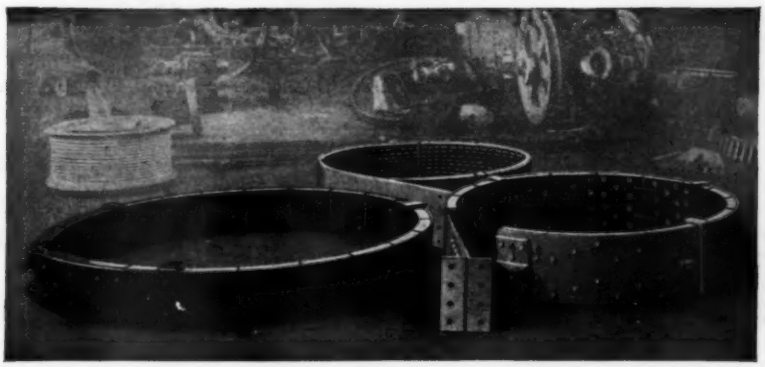

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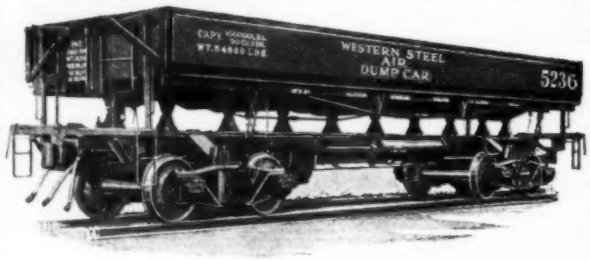

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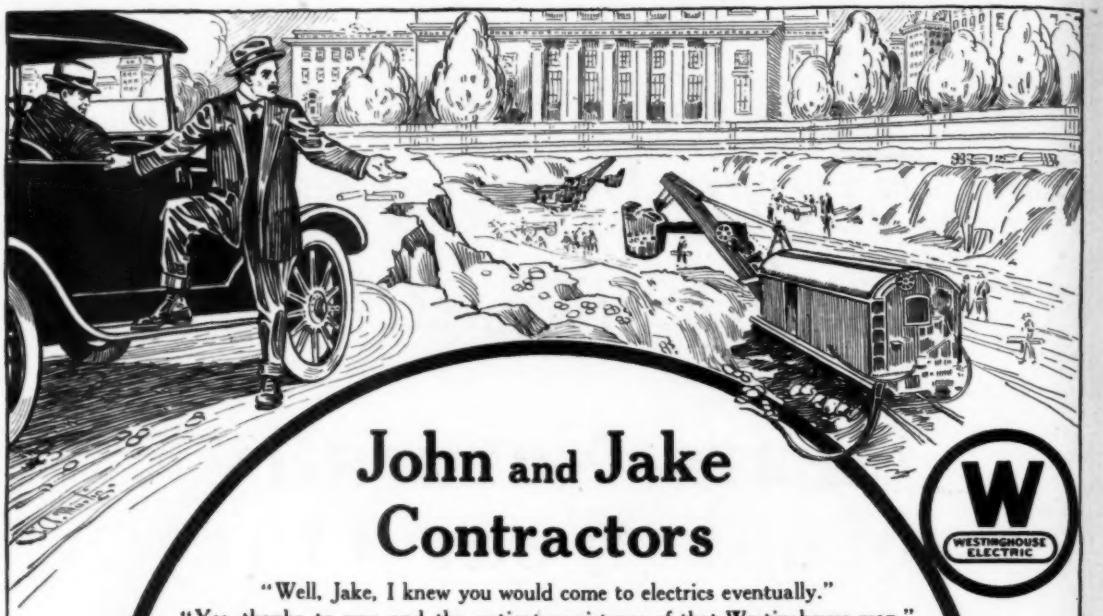

John and Jake Contractors

"Well, Jake, I knew you would come to electrics eventually."

"Yes, thanks to you and the patient persistence of that Westinghouse man."

"I can see it is bringing you a better class of work, Jake."

"No one realizes that better than I, John. The smoke and noise of my old steam shovels would have been a big drawback in this section of the city."

"And I suppose you have had them long enough to find they are cheaper to operate and more convenient."

"Yes, old man, they are better in many ways. Throw a switch and digging begins. No firing up. No coal and water to handle. No water pipes to freeze when the temperature drops, and no standby losses. I have fewer attendants now, and I can see that maintenance on the electrics is going to be far less than on the old steam shovels."

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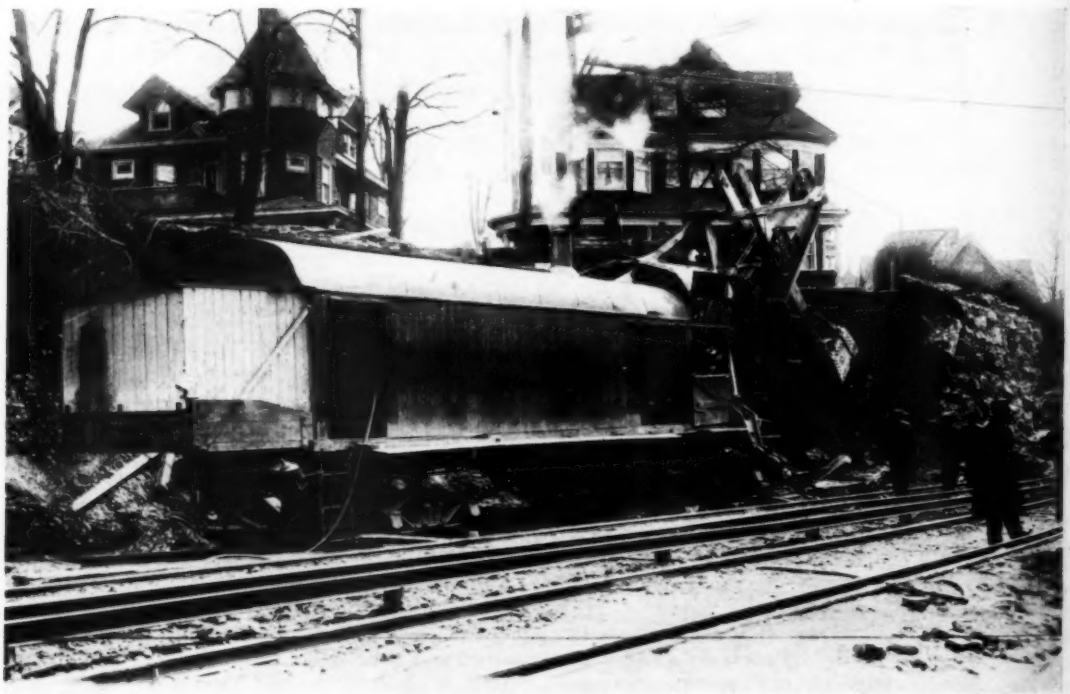
Showing 18-B shovel digging its way down a 6 per cent grade, on the Eastern Parkway division of the Brooklyn Subway. Required depth here will be 50 feet. Fleet of 5-ton Packard and 6-ton Garford motor trucks takes care of the dirt. The machine digs about 120 truck loads a day



Atlantic type, class-45 steam shovel tearing out abutments on the Brighton Beach Line, Brooklyn, N. Y. Joseph Flannigan, the efficient cranesman, says this is the most ticklish job he has ever had, as they have to dodge trains about every three minutes. Note the special equipment to allow the machine to pass under a 13½-ft. bridge clearance. See description of trucks, jacks, etc., in article

The Excavating Engineer

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The Inter-Continental Construction Corporation's Subway Excavation in Brooklyn, N. Y.

Interesting Problems Involved in Digging Two Miles of Open-Cut Through a Crowded Metropolitan District.

ONE of the most interesting contracting jobs in the country at the present time is the subway construction which the Interborough Rapid Transit Company has under way. Two lines are being built at the same time. The Brighton Beach line is to be the main artery from New York to Coney Island; and the Eastern Parkway line is an extension of the present Interborough subway out to the newer residence district. Both lines will have four tracks, most of the way in pairs, two above the other.

The Inter-Continental Construction Corporation has contracts for about a mile of excavation and concrete work on each line. F. L. Hartigan is president of this corporation. N. L. Kennedy is superintendent on the Brighton Beach section, and William Weller has charge of the Eastern Parkway work.

The work on section 12 along Eastern Parkway was described and illustrated in our issue of January, 1916.

Excavation Involved

The Brighton Beach job consists of widening and deepening the present grade from Malbone Street to Church Avenue, a distance of about a mile. This presents the unusual problem of making a four-track line on a two-track right of way. About 180,000 cubic yards of earth, clay and stone abutments are to be removed. The average depth of the cut is 23 feet.

Concrete retaining walls are required along the entire length of the cut. These are 10 feet wide at the base, tapering to 2½ feet at the top. The wall proper is 23 feet high, but a 5-foot concrete fence tops this, which makes the wall 28 feet high. Concrete to the amount of 60,000 cubic yards will be required to complete these retaining walls, and the arches which cover the subway. The construction company will receive $1,300,000 for the complete contract.

The Eastern Parkway cut is part of the line running from Atlantic Avenue to New York Avenue, in Brooklyn. The Cranford Company is building the first section; the Rogers-Haggarty Company has the third, while the Inter-Continental Construction Company has the second, known as Section 12. This is 6,600 feet long. It averages 50 feet deep and is from 33 to 120 feet wide. About 650,000 cubic yards of earth are to be moved. The contract price for excavation and cement work on this section is $2,644,000.

Problems Encountered

Extraordinary difficulties were encountered on the Brighton Beach line because traffic had to go on while the work was in progress. Twenty-four trains an hour pass the steam shovel, even during the slack part of the day. It is impossible to run at all before 9 A. M. and after 4:30 P. M., the rush hours. The dump cars run on the regular electric tracks. Thus the shovel must necessarily be idle every time a train passes, for fear a boulder might roll off the car and injure someone on the train.

An Atlantic-type, class-45 steam shovel is used for the excavation. It makes three to five trips a minute. But a shovel which under ordinary conditions does 2,000 cubic yards a day, is able here to do not more than 700 or 800 cubic yards in the same period. The runner on this shovel is James O'Flannigan, and the cranesman, Joseph Flannigan.

Our picture shows this shovel at work tearing down old abutments and widening the cut.

Special Equipment

The earth is hauled on 16-cubic-yard Western dump cars, in trains of ten. Four 50-ton American locomotives, with extra large No. 10 Westinghouse air pumps, and special small drivers, pull the cars out of the cut; and then they are taken seven miles, by electric power, to Brighton Beach. Here the earth is used to fill up the old Brighton Beach racetrack. Six trains are sent to the dump each day. One small locomotive handles all the cars at the dump.

Adjusting an Atlantic 45 to a 13½ Foot Clearance

It was found that there would be only 13½ feet clearance for the Atlantic shovel under the street

crossing bridges. This problem was solved by making the following alterations:

(1) Eight inches was cut off the steam-dome.

(2) The convex top-plate was replaced by a flat plate.

(3) The side of the dome was tapped and the safety valve brought out flush with the top.

(4) The entire house was lowered 8 inches by cutting off the standards.

(5) The standard 33-inch wheels were replaced by specially cast 12-inch wheels. This gave a further clearance of 21 inches.

(6) 110-lb. rails were used in order to keep the propelling sprocket clear of the ties.

Turning the Shovel in Narrow Cut

When they had finished one side of the Brighton cut, they were confronted with the problem of turning the Atlantic around in a cut only 74 feet wide. They did it this way:

(1) The shovel was jacked up with four ordinary 20-ton screw-jacks.

(2) When the weight was off the trucks, these were turned at right angles to the body.

(3) The weight of the shovel was then let down on the trucks, and the whole load was propelled ahead until the body was 45 degrees from the track.

(4) The shovel was jacked up again and the performance repeated. She was completely reversed in just four moves.

Must Care for Trees

The Eastern Parkway runs through the most beautiful part of Brooklyn. The Public Service Commission, therefore, in order to prevent marring the scenery, imposes a fine of $300 on the contractors for every tree injured during the work. As there is a row of elms very near the edge of the cut on both sides, great care must be exercised by the shovel men. Only two or three trees have thus far been destroyed.

A six story apartment house extends over the cut at one point. Mr. Hartigan's men were able to dig under this and at the same time place sufficient braces to prevent even a crack in the walls of the building.

At another point a huge statue had to be moved temporarily from the right of way. This was easily done by the use of low trucks and a locomotive crane.

Digging Under Big Water Mains

On the Eastern Parkway job, large water mains of 48 and 36 inches diameter were encountered. After the dirt was removed, these were supported by big wooden girders; and the two 18-B Bucyrus shovels went on digging down to 60 feet below the mains.

About 500 feet of this cut runs along a reservoir; and as the bottom of the cut is 50 feet below the bottom of the reservoir, special timbering had to be used to hold the bank and prevent flooding. There has been no trouble from this source yet; and two Atlantic diaphragm pumps take care of all water.

Plan of Cuts on Parkway

In addition to the two 18-B Bucyrus shovels, the Inter-Continental Corporation has used a model-28 Marion and another Atlantic 45. A class-14 Bucyrus dragline, with 2½ yd. bucket, was also used during the first stage of the work. Its operation was fully described in our issue of January 1916.

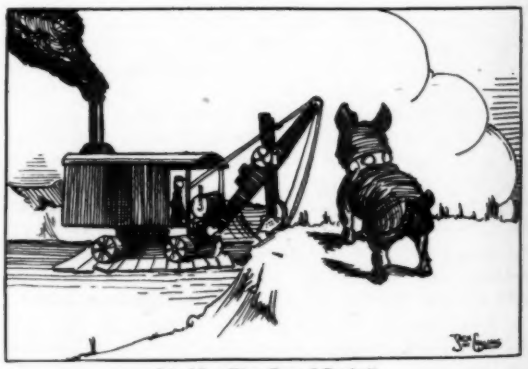
The shovels were started on the surface at different points along the line and allowed to dig their way down on a 6 per cent grade. They could then come out on their own power.

In one place, however, a Bucyrus 18-B had to dig down on a 19 per cent grade. When it had finished the required work at a depth of about 60 feet, the machine was lifted to the surface in three parts by a 20-ton Ohio locomotive crane. This crane, by the way, has independent swinging, hoisting and propelling devices, so that it can do any or all of these at the same time. On both jobs a total of 90 Western dump cars are used for the earth; while 30 Lakewood cars of 42 cu. ft. capacity, with special side dump, haul the concrete. They are drawn by two small Vulcan locomotives, on 2-foot gauge track. Two big Lakewood steam mixers and 6 smaller gasoline mixers (Wonder and Lakewood) furnish the concrete.

Motor Trucks Used

A fleet of 12 Garford 6-ton trucks, and 5 Packard 5-ton trucks, are used to supplement the dump cars on the Parkway section. A record day's work was made recently when one of the 18-B Bucyrus shovels loaded 148 motor trucks in eight hours. This shovel is shown in one of our illustrations; M. Parkinson is its runner and John Wellington is the cranesman. An ordinary day's work, is 125 to 130 truck loads, each truck holding 4 cubic yards, loose measurement.

The work on this job was begun about a year ago; and Mr. Hartigan expects to finish his contracts before July, 1917.



It's After That Bone I Buried!

Gasoline Dragline Operation on the Yuma Project

A Description of the Yuma Project, United States Reclamation Service, with Special Reference to Oil-Engine Dragline Operation on Drainage Ditches in the Yuma Valley.

THE City of Yuma, a rapidly growing city of 4,000 inhabitants, is situated at the confluence of the Colorado and Gila Rivers on the Arizona-California state line, about 24 miles from the Mexican border. Here the Colorado River, after flowing in a general south-westerly direction, takes a sharp turn to the west for about six miles and then flows southwest again into Mexico and eventually into the Gulf of California. This river forms the boundary line between the states of Arizona and California, and also, as may be seen from our map, between Arizona and Mexico.

The Yuma Project of the United States Reclamation Service includes about 150,000 acres of desert land, rich in agricultural possibilities. Part of this is to the north of Yuma on the California side of the Colorado River in the San Pasqual Valley and the Yuma Indian Reservation, and part is in the Yuma Valley, south of Yuma and on the east of the Colorado River.

Description of Irrigation Project

The irrigation feature of this project is now practically completed. In order to understand the drainage work at present under way, it is necessary to have a clear conception of the project as a whole.

Twelve miles above Yuma, the Leguna Dam, nearly a mile in length, spans the Colorado River. This dam raises the water to a height of about twelve feet. This is a diversion dam. The water thus held back deposits in this basin about 65 per cent of the silt which it has carried with it down the river. Two head gates control the flow of water through the canals. This canal system has been completed. It consists of a main canal fifteen miles in length, running from the dam on the California side of the river to the intake syphon, a concrete-lined well, just above Yuma. From this canal, laterals supply sufficient water to irrigate 8,000 acres in the San Pasqual Valley and 10,000 acres in the Yuma Indian Reservation.

The concrete-lined well or syphon just mentioned, is eighty feet deep. From here the water is carried under the Colorado River through a 14-foot concrete tunnel into a well on the Arizona side of the river, thus forming an inverted syphon, and is conveyed in canals to the 60,000 acres of land in the Yuma Valley. The Yuma Valley is twenty-four miles long and from three to seven miles wide and is practically level, sloping gently south and west to conform with the fall of the river. This valley is protected from the Colorado River and its flood waters by a levee constructed by the Reclamation Service. This levee extends along the east or Arizona bank of the river from Yuma to the international line. On its top is a government-owned railroad, 23½ miles in length, the only government-owned railroad operated as a common carrier in the United States.

This is a brief description of the principal features of the Yuma Project.

The Drainage Work

Irrigation in the Yuma Valley has been under way for the past five or six years, and the water plane has been brought to such a height as to necessitate provisions for drainage. It is this work that the Reclamation Service now has under way.

The plans contemplate the construction of a drainage ditch and laterals running down the valley and draining into the Colorado River near the international line. A pumping plant at the mouth of the canal will lift the water over the levee into the river.

The total excavation amounts to somewhat over a million cubic yards. The main canal is about 30 feet wide at the bottom, about 20 feet deep and has natural slopes. The material is deposited on both sides of the canal with no attempt at forming a berme. The idea is to make a roadway down each bank for

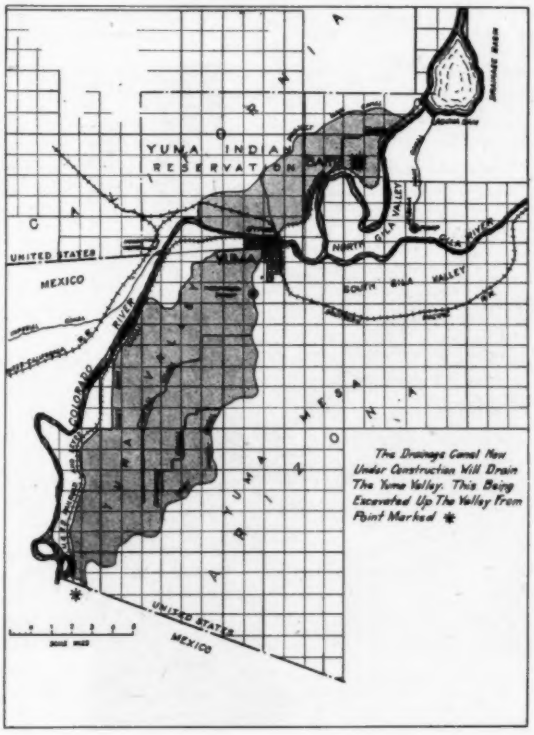


Fig. 1. Coming up with a bucketful.

Fig. 2. Starting to dump.

Fig. 3. Dumping.

Fig. 4. Starting to swing back.

the draglines to travel over in clearing out the silt that will collect. These roads will be built by running a 75 H. P. Holt caterpillar over the spoil piles, pounding them down to a firm base.

The Dragline Equipment Used

The excavation will be done by two gasoline-driven dragline excavators. A class-14 Bucyrus dragline is now in operation, and it is contemplated to move a small Marion machine here from another part of the Project. The Bucyrus is equipped with a 60-foot boom and a 2-yard bucket. It is mounted on caterpillars and driven by a 120 H. P. six-cylinder gasoline engine, burning distillate fuel. The Marion has a 40-foot boom and a ¾-yard bucket; it is a converted small revolving shovel.

The adoption of an oil-engine drive has been necessitated by the high cost of coal in this vicinity. This precious commodity costs $24.00 a ton at Yuma, and is so scarce that many natives have never seen it.

The operation of The Bucyrus has been most successful. When running steadily, the consumption is 6½ gallons an hour, at approximately 9 cents a gallon.

The machine is similar to a steam machine except that an oil engine replaces a steam engine and boiler, and suitable friction clutches are provided. The arrangement of the operating levers is the same, in fact any good steam operator has no difficulty in becoming familiar with this machine.

When the dragline is started in the morning, the engine runs on gasoline for several minutes until warmed up; and then the distillate is switched on. The distillate is brought to the work with other supplies on the government railroad. It is shipped in steel drums, containing 40 to 50 gallons each and is pumped by hand into the fuel tank on the dragline, which has a capacity of 150 gallons.

Dragline Operation

The main ditch is being laid out in such a manner as to follow, where possible, the course of old sloughs. In such cases these sloughs are widened and deepened by the draglines. This is illustrated well in two of our views. Work is being started at the southern end, the draglines working north up the valley.

Generally speaking, the operation is as follows: The right-of way is first cleared by a gang of Indians. The Bucyrus class-14 follows, digging two-thirds of the ditch from one side, depositing the material as before described, fairly close to the bank. The small Marion will follow on the other side, completing the ditch to the required width.

The ground, though somewhat uneven, for the most part affords a good support for the machines; no planks or brush need be used under the caterpillars. Some deep hollows, however, are filled in by the machines in advance of themselves, to provide a roadway to work on.

The material is all silt and easily handled, as it clears from the bucket freely. The Bucyrus is averaging about 1,000 cubic yards in eight hours. At

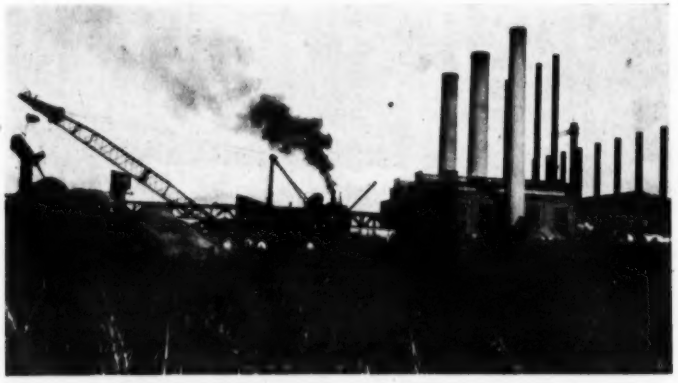
(Continued on page 297)

The left-hand view shows the type of slough found in this vicinity. The right-hand picture illustrates how this slough is widened and deepened by the dragline excavator.

From left to right, N. D. Conway, superintendent of Construction, John Levake, Mechanical Superintendent, and Chas. Flynn, Bucyrus erecting engineer. They are standing under the Bucyrus dragline. Note oil tank slung under revolving frame.

Excavating from the site of the intake wells. Material was placed by 4-yard Western cars in an embankment for proposed intake channel. The bottom of the pit was 25 feet below the base of the dragline.

Excavation completed in pit, only a few floor slabs remaining to be placed. View taken from west end looking down center line. Embankments were made as fills on east end from a point opposite to where second dinkey stands.



Casting over into embankment where filling was required to obtain 25-foot depth of pit.

A stock pile blocked the easiest way of approach to the site of the work from the point of erection. The dragline is here shown digging its way through.

Class-14 Bucyrus Dragline Excavating for Submerged Coal Pit of The Duquesne Light Company, near Pittsburgh, Pa.
Duquesne Contracting Company, Contractors.

Excavation for the Largest Submerged Coal Pit in the World

The Excavating Methods Employed by the Duquesne Contracting Company, Together with a Description of the Novel Manner in which the Dragline Excavator was Taken onto the Job.

THE Duquesne Contracting Company of Pittsburgh, Pa., have recently completed for the Duquesne Light Company, the largest submerged coal pit in the world. This pit is near the main generating plant of the Light company on Brunots Island, in the Ohio River, near Pittsburgh.

Description of Pit

The purpose of this pit is for the storage of coal under water, in order to prevent spontaneous combustion. It has a capacity of 100,000 tons. The pit is 800 feet long, 150 feet wide and 25 feet 6 inches deep, with inside slopes of 1 to 1.

It is not the purpose of this article to describe the interesting concrete work on this contract, as we propose to deal principally with the methods of excavating employed. A brief outline of the character of this work may, however, be essential for a clear understanding of the work.

Lowering Dragline from 50-foot Viaduct

In order to put the dragline excavator on the job, the contractors employed a rather interesting method. It was necessary to lower the machinery of the dragline from a 50-foot viaduct of the Pennsylvania Railroad as shown in one of our views. There was no trouble of course about the base of the machine, but the carbody containing the bulk of the machinery weighing about 42 tons requiring careful management. The equipment on hand was a 75-foot derrick. Slings were put around the front and back ends of the machine. In order to prevent these slings from slipping together in the middle, a chain was fastened around the front and back ends.

Just after the dragline was lowered from the 50-foot viaduct, showing slings over the machine.

The clearance was so small and the slings hooked so close together, that it was feared that the resulting downward force would crush the roof. This was guarded against by building a frame or truss on the top of the carbody out of 8 x 8 timbers. The two timbers that ran lengthwise of the roof were projected out about two inches on each side and the cross pieces were cropped out in order to fit the edge of the roof. These pieces of 4 x 4 inch timber were used as braces or shores underneath the rafters. The machine was lowered with no difficulty, and the roof was not damaged in any way, but the lower channels on the back end of the machine were bent slightly. We are told by Mr. George Stanberry, who was in charge of the operation, that this could have been avoided by placing the slings back even with the counterbalance and by filling in the flanges of the channels on either side with planks.

The Excavation

The excavation required the removal of 49,000 cubic yards. The material was a mixture of loam, sand and gravel and was ideal for dragline operation. The pit excavation was made in two cuts lengthwise of the pit. These cuts were 25 feet deep and 75 feet wide at the bottom. Some of our views indicate how true these slopes were made. The dragline worked from the top, working down the length of the pit.

Part of the material was cast aside and part was loaded into 4-yard Western dump cars. These hauled the earth to the east end where embankments were required.

As stated, the depth of the pit when completed is 25 feet. At one end, the bottom of this pit was only 8 to 10 feet below the original surface of the ground. Here, therefore, the material was excavated and cast by the dragline.

Approximately two-thirds of the excavation was loaded into 4-yard Western dump cars and hauled to parts of the pit, where it was necessary to build up an embankment to obtain the 25-foot depth. Excess material was dumped upon an embankment west of the pit, as a protection against the river in flood stages. The river side of all embankments have been paved with rip rap of one-man-sized stones.

The major portion of the dragline excavation in connection with the intake is yet to be done. 12,000 yards, however, have been moved from the location

(*Continued on page 299*)

The Excavating Engineer

A Monthly Publication Devoted to Excavating and Allied Subjects

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Address all communications to the company.

THE
EXCAVATING ENGINEER PUBLISHING CO.
Bradlee Van Brunt, Manager and Editor
South Milwaukee, Wisconsin

We Are At War!

It is difficult for many of us to appreciate this fact. But we might as well realize now, that one and all, we must sooner or later do our part. There can be no middle path, there is none. It may mean sacrifice. But in the last analysis there is no greater privilege than to be able to make a sacrifice for one's country.

Strange and wrong as it may seem, and bitter as the price will ever be, nothing that life has ever offered can awaken the idealism of a people as does War—the day may come when this will no longer be true—but that day has not dawned. We have needed that awakening, and we are getting it.

The World has called us "dollar chasers," yet the World is already marveling at the magnificent example our "dollar chasers" are setting civilization. Manufacturers are offering their plants, wool growers are offering their whole output, and every line of trade in this country are volunteering to the government at great sacrifices. In Germany this required commandeering. It is up to you contractors and operators to show that you are made of the same stuff.

The time will come when your country will need your experience and your skill.

We are here to help you.

What the Engineer Officers' Reserve Corps Offers for Engineers and Contractors

We have had so many requests for information relative to the requirements for a commission in the Engineer Officers' Reserve Corps that we give below extracts from General Orders No. 32, which seem to apply to engineers and contractors.:

No age limits apply.

Commissions are issued for a period of five years.

In time of peace members of this corps shall not be subject to call for service, except that they may be required to serve with troops in the field or at field exercises for periods not to exceed 15 days in any one calendar year. In time of actual or threatened hostilities members may be ordered to temporary duty with the regular army or as officers in volunteers or other organizations. This is subject to physical examination.

Commissions are issued for one of two classes of service.

(*a*) For duty with combatant engineer troops or other duties in the service of the front.

(*b*) For special service on the lines of communication or other points in the rear, although not ordinarily assigned to combatant duties, they will be subject to such assignment if needed.

Under Class *a* there are three grades: (*1*) First and second lieutenants, (*2*) Captains, (*3*) Majors.

For a lieutenant, the applicant must either be an engineer in active practice of his profession or in some closely associated work. He must either have qualified for the grade of a junior engineer, civil, electrical or mechanical engineer in civil service, a graduate from an approved engineering college or have been in the practice of his profession for at least two years.

For a captain he must either have a grade corresponding to assistant engineer in the engineer department or must be a professional engineer who has been at least eight years in the active practice of his profession and for at least two in responsible charge of work as principal or assistant. Graduation from a recognized school of engineering counts for two years. He must have knowledge of certain specified principles of military organization and operations.

A major must be a professional engineer of not less than 35 years of age and with 15 years of active practice and five years' experience in responsible charge of work. The allowance for graduation from an engineering school applies here also. He will be required to pass an examination on certain specified military subjects.

For Class *b*, Special Services: Candidates must be qualified for one of the following duties; (we have here selected those qualifications only that appear to apply to our readers).

Surveying for military purposes.
Construction and repair of fortifications, etc.
Construction and repair of military roads, railroads and bridges.
Military demolitions.
Location, design and construction of wharves piers, landings, storehouses, etc.
The operation of railroads, including construction and operation of armored trains.
Bridge engineers. Highway engineers.
Constructing engineers. Mining engineers.
Electrical engineers. Railroad engineers.
Railroad operating officials.
Sanitary and topographical engineers.

No oral or professional examination will be required. Candidates must submit evidence of their employment with references.

Apply for further information to the nearest U. S. Engineer Office.

What the Publishers are Doing

The Excavating Engineer received the following telegram on Saturday, April 14th; the reply follows:

Excavating Engineer, "New York, N. Y., April 13, 1917.
Bucyrus Co., So. Milwaukee, Wis.
Government needs active co-operation all publications during war many prominent business publishers express desire to give editorial co-operation and free advertising space to support governmental activities railway age gazette engineering news record iron age power motor age dry goods economist and thirty others have already volunteered wire your offer immediately so we can take telegrams to Washington addressing
McGraw-Hill Company,
Simmons Boardman Company
or United Publishers' Corp.
10:40 A. M., April 14."

McGraw-Hill Co., "So. Milwaukee, April 14, 1917.
10th Ave. and 36th St., New York City.
The Excavating Engineer is proud to co-operate to the fullest extent possible.
Bradlee Van Brunt,
Manager and Editor."

This tells its own story. Every one of our readers can do his part, we propose to show him, to the best of our ability, what that part is.

What the Engineers Are Doing

The engineers of New York City and vicinity have also set a splendid example to the rest of the country. There is in the process of organization an engineering regiment, the first unit of its kind outside the regular army service. Col. C. H. McKinstry, Corps of Engineers U. S. A., will be the commanding officer, while the battalion commanders will be Majors Wm. Barkly Parsons and Arthur S. Dwight both of the Officers' Reserve Corps. The call for enrollment has been issued and office headquarters have been established on the seventh floor of the Engineers Societies' Bldg., 29 West Thirty-ninth St., New York City. A recruiting station will soon be established.

The regiment will consist of 37 officers and 1061 men. There is an immediate need of men to fill up the ranks. Needed particularly are men skilled in the various trades; contractors, employes, railroad men, mechanics, carpenters, machinists, etc.

Due to the enormous strain put upon the administration for equipping the new army, it will be sometime before the government can purchase the essential items of equipment. Consequently, the Military Engineering Committee of New York plans to supply this regiment with such modern equipment as is urgently needed, and have agreed to underwrite a sum for this purpose. This organization is a model which the entire country should follow.

This is splendid evidence of the activity and patriotism of the New York Engineers and it offers an excellent opportunity for patriotic and useful service.

What the Contractors Are Doing

The General Contractors' Association of New York have set a splendid example to contractors all over the country by making an offer to the War Department to do emergency construction work practically at cost. The offer was made by Frederick J. MacIsaac, president of the Association. Mr. MacIsaac points out that although their offer was actuated primarily by patriotic motives it is of value to them, as they are enabled thereby to keep their personnel together and although the work would bring them little profit, if any, they would at least not be suffering serious loss. It is understood that the first job that the association will be called upon to handle is in connection with the government forts on Long Island Sound, or in New York Harbor. They are now able to rush 800 men down to Long Island Sound, and they can assign such a job to one of the members of their association. One contractor, however, will not be called upon to bear the whole burden of the work as each contractor member would be called upon to furnish a quota of men with their own foreman. These men would work under the general direction of one contractor. It is stated that the contractor to whom the work is assigned must be left largely to his own resources and there must be a minimum of red tape. Men with experience in different kinds of work will be assigned to such work. The offer was made to Col. Abbot in command of the coast defense of New York, and the proposal was to charge cost plus 7½ per cent. This percentage covers small tools, field supervision, insurance, etc. F. L. Granford is chairman of the committee of military construction to be done by the General Contractors' Association.

Dragline Operation on the Yuma Project

(*Continued from page 298*)

first, single shifts were worked; but it is the intention to triple shift when work gets well under way.

Work was started in December 1916; and the main drains and laterals are not expected to be completed for several years.

L. M. Lawson is project manager at Yuma, N. B. Conway, superintendent of drainage work, and John Levake master mechanic.

· FIELD NOTES ·

QUESTIONS pertaining to the operation, maintenance or repair of excavating machinery will be answered through this column. Address, Field Note Department, Excavating Engineer, South Milwaukee, Wisconsin.

Cautions for Shovel Runners in Moving a Shovel

BY GRIFF HUGHES

Reprinted from our issue of April, 1913, by request

When moving a shovel back it is important to keep the dipper as close as possible to the bottom of the cut without interfering with the track. Don't have the dipper hanging with steam on the crowding engines. While the machine is standing waiting for a track to be laid the steam naturally gets down in the boiler and the fire will be bad. When you start to move, therefore, a great portion of the power will be taken from the crowding engines and the dipper will drop, endangering those who are in front of the shovel tearing up the track.

Another important thing to remember is not to neglect to chain the circle, in order to keep the boom from swinging. For when the shovel is being moved the back end may get off the track, the shovel may settle on one side or a rail may break, which would be apt to cause the shovel to start to tip over. Nine times out of ten there would be water in the swinging engines as the shovel has probably been standing by while the track was being laid. Hence there would be no power to swing the boom back and balance the machine. As a matter of fact, even though there were live steam, it would be very difficult to keep from losing control when the boom has swung far over to the side.

To prevent absolutely such an accident as this, it only takes a few minutes to fasten one end of the chain over the A-frame and the other end to the turn buckle clevis on the circle. By so doing you will not only save yourself from the possibility of accident but you will probably save the firm for whom you are working much money and valuable time.

A Correction

In our article entitled "Simple Method of Removing Machinery from Boom of Big Revolving Shovel," which was published in this department in our April number, we wish to call attention to a misprint that appeared on the fifth line of the second column. The word hoist should of course have been boom and the sentence should have read as follows, "First throw a heavy piece of chain, preferably a $\frac{7}{8}$" switch chain, over the boom above the boom engine."

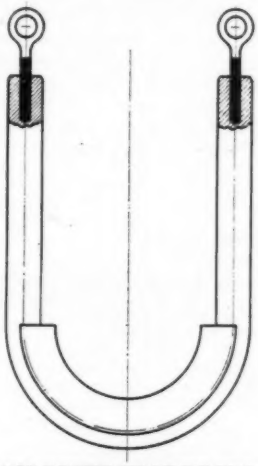
Another Method of Replacing a Broken U-bolt on a Steam Shovel

BY P. J. KEATING,
Chief Engineer Barr Clay Co., Streator, Ill.

(In our April number we published a description of a simple method of replacing a broken U-bolt. Mr. Keating has offered the suggestion given below, as simpler and perhaps more effective.

The fact may be of interest, that on all new Bucyrus shovels, the U-bolt is tapped for the eye-bolts in a similar manner to that described below.)

All U-bolts upon their receipt and before being placed in stock should be drilled and tapped to receive a $\frac{3}{4}$" eye-bolt, the outside dimensions of the eye being slightly less than the inside dimensions of the U-bolt nut, through which it passes.



U-BOLT TAPPED FOR ¾" EYE BOLT

To each eye-bolt is spliced about 30 feet of 7-16" Samson spot cored. This cord is knotted every three feet of its length in order that it may be securely grasped when very greasy.

If the U-bolt saddle block and cap have fallen to the ground, the dipper arm is levelled up and the saddle block cap is hoisted into position with a $\frac{3}{4}$" manila rope tackle. When the U-bolt nuts have been located on the slide plate, each eye-bolt is lowered through its nut and slide plate hole, down along the saddle block groove to the ground. It is then screwed into the U-bolt in the bottom of which rests the lower half of the saddle block bearing cap.

Two men now raise the U-bolt through the slide plate and a third man passes a 4" x 4" x 10' stick over the engine and under the U-bolt, holding it securely while the nuts are screwed down. The lever is needed only to rest the men raising the U-bolt as the nuts are in position to be screwed home.

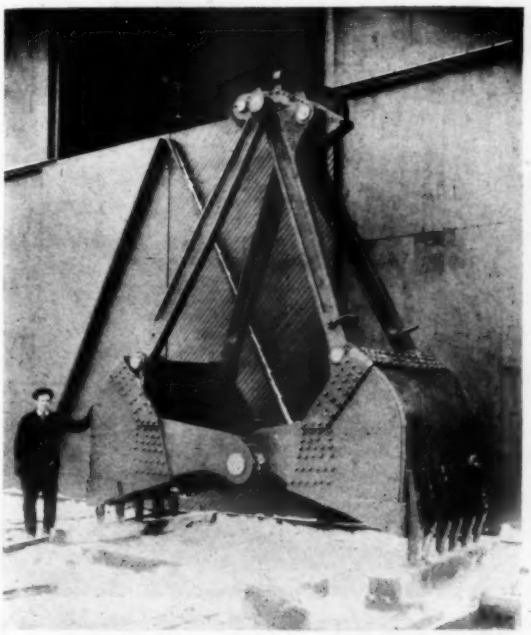
UMI

DEVICES YOU OUGHT TO KNOW ABOUT

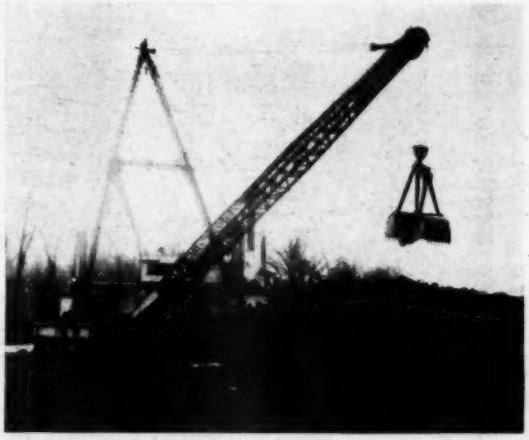
A Remarkable Grab Bucket Excavating Record

The Edward Gillen Dock, Dredge and Construction Co. have been making a remarkable output record on their Beardstown, Illinois, levee project. They have been operating on this job a Marion dredge with 110-ft. boom equipped with a Williams special dredging bucket of 5 cubic yards capacity. In October of last year this bucket dug 167,000 yards in clay, and it is claimed that in June 156,000 cubic yards were excavated and in 18 working days as much as 135,000 cubic yards. On one occasion this grab bucket pulled up three tree stumps together with a load of earth and clay weighing, it was estimated, in excess of 30 tons. This bucket is shown in operation in one of our views. It was of 5 cubic yards capacity, weighing 19,250 lbs. Our other view shows a new bucket purchased by the same company for use on the same contract. This bucket weighs about 26,300 lbs., with a maximum capacity of 10 cubic yards. The bucket, however, is rated as of 5 cubic yards capacity.

The main hinge pin is 9″ in diameter; sheave pins are 6″ diameter; the corner bars are of cast steel 1″ section, heavily reinforced. The main plates of the bucket are 1¼″ thick; the high carbon steel lips are forged to 1½″ thick. The teeth are heavy high carbon steel forgings.



This Williams Bucket weighs about 26,300 pounds and has a maximum capacity of 10 cubic yards.



The Edward Gillen Dock Dredge & Construction Company's dredge with 110-ft. boom and 5-yd. Williams Bucket. This bucket dug 167,000 cubic yards of clay in one month.

The steady line is attached to a friction-operated drum, which maintains a sufficient tension all the time to keep the bucket from swinging. The clutch on this can be operated by hand so that when the bucket is lowered into the material the dredge can be pulled ahead just as the backing chain on an ordinary dredge operates in connection with the dipper. Both buckets were manufactured by the G. H. Williams Co., of Erie, Pa.

Excavation for Largest Submerged Coal Pit

(*Continued from Page 295*)

of the intake wells, preliminary to driving the sheet piling forms for the cofferdam. The excavation from the inside of the cofferdam and in the center of the wells was handled by derricks. The excavation for the main channel is to be started in the near future. This main channel runs from the intake to the river. We expect to publish another article descriptive of this work in a future issue.

Performance of Dragline

Under normal conditions, the Class-14 Bucyrus dragline dug and cast approximately 1500 cubic yards per ten hour shift and dug and loaded into cars about 1,000 yards. The dragline was able to trim the slopes very closely without subsequent hand trimming, but in cases where the slopes were concreted, it was necessary to do a little hand work in order to bring the slopes to the exact lines.

J. J. Emes was superintendent on the job for the Duquesne Contracting Company. C. W. Gibbs, chief engineer of the company, was in direct charge. We are indebted to Mr. Gibbs for much of the above information.

These two views show an 18-B Bucyrus owned by Handy Brothers, excavating for a basement of a theatre in New York City on 44th Street, between Broadway and 8th Avenue, which calls for 6500 cubic yards of excavation. The shovel averaged thirty 4-yard wagons per hour. The pictures show the shovel pulling itself out of the hole which it had dug. Frank Johnson is running the shovel, and Joe Keagon is firing.

A recent view of Gaillard Cut on the Panama Canal showing the Bucyrus dipper dredges "Paraiso" and "Gamboa," tearing their way th this barrier can be seen in the foreground. The men are busy drilling, and the air lines may be seen like network covering the embankment to th formerly the administration buildings at Culebra. These are now used as barracks, and will probably have to be abandoned shortly, due to the e

Fred Schneider's 14-B Bucyrus shovel grading Gleason Avenue, New York City, between Havermeyer Street and Castlehill Avenue. There were 8,000 cubic yards of excavation, including many tree stumps, which, as may be seen from one of our views were loaded bodily in the motor trucks. The cut averaged from one to five feet in height, and the shovel averaged a nine-foot lift. Seven 5-yard Pierce Arrow trucks were used. The shovel averaged 450 cubic yards per day. The comparatively low yardage was due to the thawing ground, which made considerable trouble for the trucks. James Gillard is running the shovel, and James Chicardel is doing the firing.

the great slide, which at one time formed a barrier averaging considerably over 50 feet high entirely across the cut. What remains of t to th... The little flags which may be distinguished in the center foreground mark the channel, which is now open. The buildings on the left were ... of the slide. This view gives an excellent idea of how the material breaks off far back from the water's edge and slides into the canal.

SHOTS FROM THE · FIRING LINE ·

Arizona

C. A. Williams is running a Bucyrus class-7 dragline at Hayden for the Ray Consolidated Copper Co.

Arkansas

Our friend, W. I. Hudson, advises us that high water has obliged them to move their Bucyrus shovel from Memphis to Arkansas; and they are now at Madison repairing their shovel for the next job.

California

News from Sunny California

BY F. W. SCHUMACHER

Bert Van Horn communicates all the way from Cincinnati, Ohio, that he stopped on the way to California at Santa Rita, N. M. but returned on account of the illness of his mother. Bert also stopped off at New Orleans and Pittsburg, Kansas, and while there had a joy ride with W. J. Sullivan. He says a mile a minute is nothing to him, and Sullivan will sell you anything up to a coffin. Bert advises me to get along with McGinnis as best I can until he returns to California some happy day. He wants Bob Reynolds to drop him a line and let him know something about their mutual friends.

C. J. Gabler writes in from Sioux City, Iowa, that he is now with the Western Construction Company of that city and expects to be with them another year.

R. M. Howard and Chester Guthrie were visitors in this city a short time ago. They have been operating a 68-C Bucyrus for the Southwestern Portland Cement Co., at Victorville, California.

Oscar Sundin is now with the Utah Construction Company at Tooele, Utah. They are building a stretch of road for the Western Pacific to the extent of 20 miles and putting in an overhead bridge across the Pedro tracks. A 70-ton Bucyrus is doing the heavy work.

Floyd Hollenbeck and F. C. Eberly are operating a model-28 for Bates, Borland & Ayer at the San Pablo Dam. Art Bechtel, Tom Bryson and Comeback Jones are on the model-41.

Palmer & McBryde have put their 60-ton Vulcan on the Blairsden job for the Western Pacific. Oscar Burke, C. A. Clancy and Chas. Carney are running the machine.

E. Hart, Racehorse Denny are on the night shift for the Spring Valley Water Company at Calaveras Dam.

James Putnan and Cy Sypkins are on an Osgood for A. J. & J. L. Fairbanks, who have a portion of the Pipeline Road for the Marin Municipal Water Company.

The Visalia Electric Company have Palmer & McBryde's Bucyrus 14-B on some road work.

Open Face Lacey, W. J. Stubbe and F. J. Coultrip are on R. B. Markle's 14-B shovel at Fairfax, Cal.

Harry Hobbs, Iama Ruff and Guy Wright are running a model-20 for A. E. Buckman leveling off real estate in West Portal Park.

James Mudrock, Ross Weaver, Tony Cruse and C. W. Fenner, Ted Thornston and Jack O'Donnell are operating Marions on the Union Iron Works Dry Dock job.

P. A. Peterson is back again on his pins and is back superintending Palmer & McBryde's job at the Calaveras Dam.

William Casey is in the hospital seriously ill but is reported to be improving.

Jack Harriman is on a 95-C Bucyrus for the S. P. Company at Lebanon, Ore. about eighty-five miles from Portland. In his letter he wants to hear from Al Adams.

Otto Bolner just returned to this city from Calaveras Dam, where he has been on a 65-ton machine.

Scott & Turner have moved their Vulcan onto their Placerville road job. J. J. McGinnis, engineer, Dolph Reynolds, craning and Meehan, firing.

Frank Anderson and Shorty Langton are operating John Anderson's shovel on the C. B. Cowden contract at Fairfax, Cal.

Blondy Burg, Robert A. Burns and Tom Halverson are on a model-20 for the San Joaquin & Eastern Ry. at Auberry, Cal.

Frank Young and John Poulsky are excavating with a Keystone shovel for Blanchard & Brown at Westwood Park.

A. J. Dion is firing for E. B. Brown on Ritchie & Company's shovel, grading property at Forrest Hill Park Tract.

R. D. Pierce, Ray De Graw, E. J. Grover are on Palmer & McBryde's 65-ton Bucyrus at Calaveras Dam. Mike Lahey and Chas. Green are skinning dinkeys. Green has a 6-cylinder Winton and makes flying trips to San Jose, Oakland, Niles and other nearby places of interest. Pierce is operator and passes everything in sight, even the roadrunners.

Buster Brown has returned from Campo, Cal., where he has been working for Moffett & Meade.

William McDonald left for Ruth, Nevada.

Highball Hauser is in town walking up and down Market Street, but not alone.

Sewing-Machine Knight and J. A. Johnson are operating a 31 for Eaton & Smith.

William Temby has just returned from Aromas, Cal., where he was in the employe of the Granite Rock Company.

C. J. Fisher, city engineer from San Jose, was a visitor in this city.

Fred Stowell of steam shovel fame is reported to be a merchant prince of Stockton. I'll bet the name of the place is Fred's Grocery Store.

A. Perrick, B. W. Hake and L. C. Pendell left recently for Ely, Nevada.

Haven't heard anything lately of Baldy Norman.

H. M. Wagner is on one of the Western Pacific Railway's 70-ton Bucyrus.

It is rumored that Mr. E. E. Vanderhoef, superintendent of the Nevada Consolidated Copper Co., at Ruth, Nevada, is in the hospital at Salt Lake City and is very seriously ill.

R. C. Douglas has returned from a trip to the East and now likes it so well out here that he is building himself a home at Corte Madera, Cal.

Jess Weaver and Elmer Reed are excavating basement at 2d and Bryant Streets for the P. J. Holland Company.

E. J. Monihan and Jimmie Raven are operating Chadwick & Sykes' Bucyrus 14-B on road work at the Crocker Tract.

Dave Colwes, J. A. Hudner, E. Louder are running the Daniels Contracting Company's 70-C at McNears Point.

H. M. Courtwright, Heinie Hemming and Felix Boseo are with the Keystone Construction Company at Thalheim, Cal.

Sharp & Fellows Contracting Company have signed a contract with the Guyamaca Water Company of San Diego for the construction of an Eastwood multiple-arch reinforced concrete dam near La Mesa, San Diego county. The dam will be about 800 feet in length and 110 feet in height. The contract price is in the neighborhood of $110,000. River side cement will be used. The plans were prepared by W. S. Post, C. E., of San Diego, who has plans ready for two other dams about ready for bids.

The Sharp-Fellows Construction Co., Central Building., Los Angeles, will start work at once on the construction of from 8 to 10 miles of logging road for the Flagstaff Lumber Co., Flagstaff, Arizona. Thos. Gannon will superintend the work.

Oscar Ford, engineering contractor and mayor of Riverside, is moving his mules and grading outfit to Tulare county, where he has a percentage contract for grading six miles of railroad right-of-way for the Visalia Electric Railroad Co. The contract lies about four miles southeast of Porterville. About 4½ miles will be main line construction, the remaining 1½ miles being a branch line to a quarry being opened up.

Twohy Bros. Co., 603 Hobart Bldg., San Francisco, were the only bidders at a total of about $1,133,000 for constructing the Second St. tunnel between Hill and Figueroa Streets, Los Angeles. The bid will probably be rejected and new bids asked if the legislature adopts a pending amendment to the 1913 Act believed necessary to validate the assessment bonds.

Canada

St. Catherines, Ontario

William T. Lundquist, formerly of Dunn, McCarthy, Clifford Co., is now loading a class-20 Bucyrus dragline for Yale & Reagan and expects to erect it here at Rochester, N. Y. on their Barge Canal contract. Good luck to you old timer!

Vancouver and Vicinity

BY A. G. BROWN

A. E. Foreman, A. M. Can. Soc. C. E., formerly assistant city engineer of Victoria, B. C., has been appointed chief engineer of the department of public works of British Columbia.

M. Leighton Wade, for the past two years electrical superintendent at Duncan, B. C., has resigned, and will re-enter the plant construction field.

T. S. Husband has been appointed waterworks engineer at Ladner, B. C.

John R. McDonald, who has for several years been in charge of the mines of the Franco-Canadian collieries, at Frank, B. C., has resigned.

Colorado

Contract for constructing 10 lateral ditches in connection with reclaiming 30,000 acres of agricultural land on the Western Slope district of Colorado has been awarded to Gaffey & Keefe, Denver, at about $116,000.

Foreign

The Log of Hutch

Our friend, G. H. Hutchinson, who is familiarly known far and wide by shovel men and contractors as "Hutch," and who, by the way, needs no introduction, is by this time somewhere in the Far East. We received a letter from him, mailed a few days after he sailed from San Francisco on the S. S. Persia Maru, in company with his newly acquired better half. Evidently they struck some pretty rough weather, as he says he had considerable difficulty staying in a chair.

Among his fellow passengers were several dredge men, among them E. H. Barker of Seattle, and E. Nance, who are going to Siberia for the Orsk Goldfields, Ltd., as dredge master, and winchman, respectively. The latter seems to be a very interesting chap, as he has been with the Royal Engineers and the Buck Hussars in the British service, and was wounded several times on the French front. (Hutch is worried as to what part of the anatomy this can be.) R. H. Higby was another of his shipmates, who is going to Bantum, Russia, as superintendent of mines for the Cascus Copper Company, Ltd., which company has considerable steam shovel work. Hutch gives us quite a detailed description of his Japanese fare, and has even so soon let out a wail as to how glad he will be when he can put Mrs. H. into a kitchen. He doesn't thrive on birds' nest soup! He tells us that several missionaries, who are with them, have been hot on his trail, but have found him rather a hard nut to crack. Hutch has promised more contributions to his log as time goes on.

This from Yokohama, Japan, dated March 29th.

"This far on our way well and happy. Got a bad shaking up crossing the Pacific; the boat was small and the ocean was busy, and was worse than a Milwaukee train off the track."

Georgia

T. E. Smith, is operating a revolving shovel in Macon, and says "hello" to Ed. Norris and all the boys.

W. H. Werchamp is also on a revolving shovel doing street work in Macon.

Illinois

Ira G. Brown is engineer on the Bucyrus 95-C for the Casparis Stone Co., at Fairmount. He says they are getting out three hundred 6-yard carloads a day; and they are now going day and night.

Iowa

Amil Parkening is operating a class-14 Bucyrus dragline for Phelan Shirley Co., of Omaha, at Ackworth.

Contract for constructing drainage ditch No. 40, Mason City, has been awarded to Fred M. Crane Co., Omaha, Neb., at 10c per cubic yard for open work, requiring 385,000 cubic yards, and to Cement Products Co., Spencer, Ia., at $73,075 for 83,000 feet of tile.

Kansas

Contract has been awarded to Cameron-Joyce & Co., Keokuk, Iowa, for constructing a cut-off near Washington for the Atchison, Topeka & Santa Fe Ry.

Pittsburg and Vicinity

BY W. S. RUSSELL

After another month of waiting, the rain has come at last which will do the country no end of good. Not April showers, but a slow steady rain that soaks and starts things growing.

The big events of the month were the Woodmen of the World Convention and the Patterson Circus at Pittsburg, which came in on the Woodmen's big day, making the liveliest times seen here for many a day, what with parades and music, banquets and patriotism with flags decorating every down-town building, automobiles flying them and a small boy's company marching to the tune of a mouth organ, it was a great day.

Governor Capper, who is a W. O. W., was here and addressed the convention at Lincoln Park. The weather was fine. The town crowded with people and everybody enjoyed themselves. A. A. Hammel was the local entertainer and did some hustling to see that everybody was taken care of.

The coal market is quiet, which is usual at this time of the year, when the mild weather cuts off the demand for domestic use and many of the operators shut down for needed repairs. Several of the stripping firms have had strikes on their hands which has curtailed their output to some extent.

We quote prices on bituminous coal as follows:

Lump, per ton	$3.00
Nut, per ton	3.00
Mine run, per ton	2.50
Mill run, per ton	2.25
Slack, per ton	1.75

f. o. b. railroad cars at the mines.

We note but little complaint now on car shortage locally. Also that the trade journals report the car supply in the middle states is now satisfactory with a few exceptions. Prices, however, hold up and the industrial demand is good. We note prices on soft coal in Illinois and Indiana are $2.50 and $3.00 for lump, $2.00 and $2.50 for nut or mine run and $1.50 to $2.00 for screenings, f. o. b. railroad cars at the mines, being more than double what they are normally.

The Whitmer Contracting Company having completed the stripping near Frontenac, are now moving their big steam shovel outfit to a new location about 6 miles southwest of Pittsburg, where they will open up a new field of over 200 acres. The coal is going to the Santa Fe Railroad. D. H. Whitmer, of Pittsburg, is general manager and Charles W. Bugbee, superintendent of field operations.

The Independent Coal Company of Pittsburg started up their new 225-B Bucyrus steam shovel last week on a field of 240 acres, 2 miles south of Oskaloosa, Missouri, on the Kansas City Southern Railroad. This shovel is one of the largest ever built, weighing over 300 tons and having a capacity to handle 5,000 cubic yards of the earth stripping per day of 9 hours. A. B. Petgen is manager of field operations. The office of the company is in the Globe Building, Pittsburg. N. H. Skourup is president, and W. F. Breivogel, secretary.

The Barton-Ridge Coal Company, of Liberal, Missouri, are operating a 225-B Bucyrus revolving steam shovel stripping a field of 170 acres, 2½ miles southeast of Liberal. This shovel is one of the largest every built weighing 320 tons,, and has shown wonderful power in digging the overburden consisting of tough brown shale and gray sand rock in its natural formation without being blasted, at the rate of over 4,000 cubic yards per day single shift. The depth of the overburden ranging from 24 to 30 feet, but the shovel has stood up to it for nearly a year and will now have easier work as the hard digging is over with and the material is softer and not so deep. C. W. Waterman is general manager of field operations.

The Sheridan Coal Company are operating the coal stripping plant purchased of the Moka Coal Company last fall, consisting of 2 Bucyrus revolving shovels, a 150-B and a 175-B. Also the Dinkey locomotives, tram cars, etc., located a mile and a half south of Mulberry on the Frisco Railroad. Otto Buche is superintendent at the plant. The Company's office is at Mulberry. E. M. Roberts is manager.

H. J. Sternberg of the Minden Coal Company, spent a day in Pittsburg last month on business with his company.

J. J. Stephenson and wife have returned from an extensive trip to Texas, Florida and Panama. J. J. looks fine and is greatly improved in health.

A. H. French was out with the Shriners for two days on their auto trip and had a good time.

George Stanbury and J. W. Shafer have finished installing a 225-B steam shovel for the Independent Coal Company near Oskaloosa.

There are good opportunities for parties having means to engage in coal stripping in the Kansas field. Strip coal land can be bought or leased at reasonable prices and there is good money in the business. Further information will be furnished by addressing W. S. Russell, Stilwell Hotel, Pittsburg, Kansas.

The Bucyrus Company have a stock of repairs for their coal stripping steam shovels at the W. L. Sullivan Machinery Company store room which is a great convenience to operators of Bucyrus steam shovels.

The W. L. Sullivan Machinery Company are located on Seventh Street, near Broadway, where they carry a large stock of miners' mill, railroad and contractors' supplies. They are dealers in machinery, engines, boilers, pumps, motors, etc., for either steam, gasoline or electric. Also have repairs for Bucyrus steam shovels. Mr. Sullivan will give his personal attention to the wants of his customers.

The Hughes Stone Company, 208 East Third Street, Tulsa, Oklahoma, have for sale a model-36 revolving steam shovel one-yard dipper, all in first-class condition and working order, having been used only eight months in their quarry. Price and terms reasonable.

Kentucky

The Ashland-Greenup Railway has given a contract to the Vaughan Construction Company, Shawsville, Va., to build a line from Ashland, Ky., to Russell, five miles. The line is to be extended later to Greenup, about 10 miles; additional construction work is expected to begin in the near future. The surveys have not yet been completed. J. L. Vaughan will probably be president of the company; Powell & Clarke, Ashland, Ky., are the engineers.

Louisiana

The Red River & Gulf R. R. let contract for grading work on an extension from Long Leaf through Rapides and Vernon parishes to Hornbeck on the Kansas City Southern Ry., about 65 miles long to I. McGinnis, Alexandria, and J. Moore & Son.

From the Sunny South

BY THE BYRONS

Conditions are getting somewhat better in Cuba, as Mr. H. M. Field of New Orleans, who does the contract work for the United Fruit Co., just placed an order with the New Orleans office of the Bucyrus Co., for one of their 14-B revolving shovels on caterpillars for one of his jobs in Cuba. This machine will work on the same job with the class-7 Bucyrus dragline recently purchased.

The Mississippi River Commission, 4th District, are working their dragline "Beauregard" at Geismar, La. They work this machine during high water from a barge. Mr. Wm. T. Newton is superintendent in charge of this machine.

All of the draglines along the Mississippi River are shut down on account of high water, but from present indications it does not look as though they are going to have any damage from the high water this year, although you never can tell.

Anyone in the Southern States wanting first-class dragline and steam shovel operators may address the "Byrons" 1105 Hennen Bldg., New Orleans, La.

Mr. Pugh, erecting engineer for the Bucyrus Co., has just completed installing a class-14 dragline on caterpillars for the International Agricultural Corporation in the Phosphate Mines near Columbia, Tenn.

Wm. Welch, erecting engineer for the Bucyrus Co., has just installed a class-24 dragline for the Grasser Contracting Co., on their levee work at Innis, La.

Frank Wilkinson, erecting engineer for the Bucyrus Co., is erecting a class-24 dragline for D. B. Hearin & Son at Baton Rouge, La.

D. B. Gore, of the D. B. Gore Co., was a caller in this office the other day and reports everything moving along satisfactorily with his coal mine in Alabama, where he is installing a 225-B Bucyrus coal-stripping shovel. He also reports good progress on his New River dredge work and on his dragline work in New Orleans.

Mr. J. A. Burt has installed his 14-B Bucyrus steam shovel on his railroad work on the N. O. M. & C. Ry., near Middleton, Tenn. This machine is mounted on caterpillars.

Michigan

P. T. Clifford & Son, with head offices at Valparaiso, Ind., tell us that the work on grading, track laying and drainage work in connection with the construction of the new yard for the Grand Trunk Railway at Detroit is now well under way. P. T. Clifford & Son are doing the grading and drainage work and the railroad will handle the track work with their own forces. P.T. Clifford & Son are operating two 18-B Bucyrus shovels and expect to move a 70-ton Bucyrus to the job before long.

Minnesota

R. J. Doyle, who was recently with Grant Smith Co., at Cedar, Wis., is now operating a Marion model-76 for A. Guthrie Co., of St. Paul, on a stripping job at Ironton, Minn.

Twin City News

CLAPP, NORSTROM & RILEY

1308 Pioneer Bldg., St. Paul

A. Guthrie & Company of St. Paul have increased their capital from one million to two million dollars. This was not done on account of the high cost of living, which is blamed for almost every increase except in large families, but on account of requirements of up to date contracting firms to have modern equipment and easy working capital. The officers of this company are Chas. Ffolliott, president; H. L. Mundy, treasurer; A. D. McDougall, vice-president; Matt. McDougall, secretary; A. L. Riley, vice-president; J. C. Baxter, general superintendent.

Fewer miles of railroad were built last year than in any year since 1893. The following states have ciphers to their credit on miles of new line built: Arizona, Colorado, Iowa, Missouri, Nebraska, Wyoming, New Mexico and Utah.

No capital for extensions was added to the greatest industry of the U. S. It is almost impossible to comprehend the far reaching significance of such a deadly blow struck by the intolerable regulations imposed by most all of the 48 states in different ways. Then on top of that, the government steps in and imposes the extra burden of 25 per cent increase in wages. This alone would make it impossible to interest new capital for new lines and extensions. It is a fair estimate to say that the railroads would have spent a billion dollars each year in new lines and double tracking old ones, and when their credit had been restored to the standard it deserves, that amount would continue to be expended each year for the next ten years. Does Congress and the state legislatures realize that 90 per cent of this enormous amount would find its way eventually to the pockets of the working classes, and will they keep on robbing themselves in this manner and kill the goose that lays the golden egg?

Capt. J. A. Green, one of the engineers with a long head and a big heart, sails on May 12th from Vancouver B. C. in company with W. F. Carey for Peking, China. He has accepted a position with Geo. A. Kyle, chief engineer of China canals, and will have charge of the reconstruction of that big canal which, the English language, so far as we have acquired it, has not sufficient vowels and consonants harmonious enough to spell without a discord, or to translate intelligently; therefore, we must omit it. But if Doc. Green can't Americanize it and give it a smooth spellable name capable of being set to music, it will be the first failure of his

engineering career. We wish him a continuation of success that has always attended his work as a construction engineer of quality.

L. A. Bumgardner Co. are moving a steam shovel and cars to do the excavation of the High Duty Reservoir at Dale St. and Wheelock Parkway. There is about one hundred thousand yards to be moved an average of one thousand feet and the 45-ton Bucyrus will chew it up in a pair of months or less if the weather keeps on behaving, which it will no doubt.

The Beecher Improvement Company have started in the Spring season with several good contracts in St. Paul and vicinity.

Huebscher & Scully Company have their 14-B Bucyrus shovel loading Western dump wagons at University and Raymond streets. This job will require about a month, when they will start on other contracts of similar construction.

The Farmers' Terminal Packing Co. are taking bids on the buildings for their new plant, to be located just across the Mississippi River from the new Armour Co. plant. These buildings will cost four hundred thousand dollars. The foundations were excavated last year and necessitated the blasting out of 16,000 yards of solid rock. Judging from the architect's plans, prepared by Hauge & Newstrom of Minneapolis, it will be one of the most modern and up to date plants in the country. This with the four million dollar Armour plant, will add greatly to the beauty of South St. Paul and add about 5,000 to the number of citizens.

Clapp, Norstrom & Riley at St. Paul have added to their line a stock of Louisiana Black Gum dragline rollers. These rollers have proved to be superior to maple rollers or rollers made of any other wood. They are lighter to handle, more durable, and prevent side slipping which is a common fault with other hardwood rollers. A trial order will convince you that Louisiana Hard Black Gum was created especially for dragline rollers and you can always have prompt delivery from the St. Paul stock.

Maurice Wogan of Denver who has been awarded the contract for the forty-mile extension of the New Orleans, Mobile & Chicago R. R. from Middleton to Jackson, Tenn., brought us down to Chicago by long distance, ostensibly to say hello, but on our arrival there he threw us, hog-tied us and held us down until we would agree to sell him two 70-C Bucyrus shovels, six locomotives, forty 5-yard Western heavy-duty dump cars and all accoutrements necessary to make two complete steam shovel plants. These were to be shipped at once to Jackson, Tenn., and be ready to cut in by the middle of May. We just had to submit after struggling and using a lot of short and ugly words, but the equipment will be there on time, and will work night and day until the three million yards have been converted into forty miles of perfectly good railroad. This is the largest contract for new railroad now let in the United States. This makes Maurice Wogan once more the largest operating railroad contractor in the United States. More power to him, say us!

Our friend J. H. Bitner has returned from his wanderings and is back on the job at Hibbing, Minnesota. He is running a model-91 for the Oliver Iron Mining Company at the Morris mine, and he tells us he is glad to be back to the old Iron Range once more. We understand, however, that he still has a tender spot for his lady friend at Elma, for he is already planning to return there some fine day in the future.

The United States Engineers' office at Duluth has received low bids dredging, Duluth-Superior Harbor, Minn., and Wis., from A. E. Breymann, Toledo, $368,970; Great Lakes Dredge & Dock Co., 15th Floor, Alworth Bldg., Duluth, $377,520; Duluth-Superior Dredging Co., Duluth, $377,520; Zenith Dredge Co., 303 Glencoe Bldg., Duluth, $384,780.

Missouri

Kansas City and Vicinity

BY M. T. BABB

The talk these days is of war and its probable effect on business. Opinions differ widely on the subject and probably one guess is as good as another. There is a world of work to be done in this section, and while, no doubt the war will postpone some of the plans of thirty days ago, still many contracts will be let in this territory during the coming summer. It is the opinion of the writer that the question of labor with which to pursue work after the contract has been awarded presents a more serious problem than that of actually getting work. Labor was scarce last summer on account of lack of foreigners. The present call of the government is not one of choice but one of patriotic duty and by the time this goes to press may be one of compulsion. Then comes the demand of the farm, and we believe that the farm labor this year may be made compulsory by the government. Certain it is that now as never before will the farm and its products be watched and guided under the care of the nation's experts. Look to your labor, Mr. Contractor, and look carefully. Before many weeks the man who can show an organization that can go out and do work if it is awarded to him to do, is the man who will get the contract.

Finney, Haskell and Seward counties have voted $395,000 in bonds for the proposed Colorado, Kansas & Oklahoma R. R. from Scott City, Kansas to Forgon, Oklahoma, where a direct connection will be made with the Wichita Falls & Western R. R. B. L. Allen, superintendent, Scott City, Kansas, is in charge of construction and he states work will start in a short time.

Press reports are to the effect that a brick road with concrete foundation will be built from Topeka to Lawrence. This will form a long link in the proposed Kansas City-Topeka hard-surfaced highway. The Topeka-Lawrence road was practically assured early in April when a committee in canvassing the farmers in the proposed benefit district found 80 per cent of them were not only willing but anxious to see the project go through.

It might be of interest to explain that the present Kansas Road Law provides that a benefit district pay 25 per cent of the cost of the proposed road; the county must stand 50 per cent of the cost and the townships through which it runs the other 25 per cent. This is not a bad idea and it is having the effect of lessening opposition.

Any small team outfit desiring work should write to A. L. Cook of Ottawa, Kansas. He generally can use you.

No announcement has been made at this writing concerning the heavy Burlington work in northern Missouri, bids for which were received March 5th. It is reported, however, that the work will be done this season sure.

Several Kansas City contractors looked over the work at Jackson, Tenn., which was let recently to Maurice A. Wogan. The reports on this work are very favorable and were it not for the fact that Tennessee is a long way from home, one or two of our shovel men would take over a part of the contract. Perhaps they will anyway.

Some time ago the Tyner Construction Co. of this city was awarded contract to repave a certain portion of McGee Street. The question of whether or not street car tracks already on this street should be allowed to remain came up. The tracks were ordered removed and promptly legal proceedings were begun by certain interests to compel the city to retain the tracks as they were. In the meantime the paving went from bad to worse. McGee street was badly needed as an automobile traffic way to the heart of the city and this delay was an eyesore to the administration. On the night of April 10th, a force of 250 men, by direction of the mayor, started work and before morning every rail in controversy had been torn up. We admit this was a high-handed illegal method of procedure and, no doubt, the K. C. Bar association will censure the methods employed, but the result is that Kansas City is benefited immensely, needed work will be done promptly and congestion will be removed. If other cities would take notice, perhaps by concerted efforts the legal forces of our country could see the light:—That law is primarily justice and should not be used to defeat or attempt to defeat its own aim.

It is an inspiration these days to see and talk with Charlie Dooling. The fire of patriotism is in his eye and there is a distinctive military bearing to his step. Charlie argues with reason that the excavating training he has received from early boyhood equips him admirably as a trench digger on the front. Charlie is the first man we have met as yet who expects to enlist as a private. Therefore, we are confident he will come out with a major's straps. It is barely possible T. R.'s Rough Riders, if they are organized, will suit this dashing firebrand better than trench work and if a little later we report a sensational charge by Roosevelt and Dooling—well don't be surprised.

St. Louis and Vicinity

BY A. B. KOENIG

The Burlington Railroad Co. have several small pieces of team work to let in Illinois. Write E. A. Peck. Division engineer, or A. Craine, assistant engineer, Federal Reserve Bank Bldg., St. Louis, Mo.

Smith & Hannan can use a ten or twelve team outfit on their Wabash Railroad work, near DeWitt, Mo. Write Clarence Mitchell, superintendent of this company, Commerce Bldg., Kansas City, Mo.

The last step in the completion of the free bridge under Mayor Kiel, occurred last week, when bids were opened by the Public Service Board for railroad ties for eight miles, to be used on the lower deck of the structure. The lowest of the twenty-five bids was $54,824.33, on the 27,000 ties required. Boeckeler Lumber Co. and C. C. Curry & Co. submitting a joint proposal. The city already has provided for the steel work and rails to be used in completing the railroad deck. It will be in operation before July first. The highway deck was opened January 20th.

T. W. Blythe can use three or four small team outfits. Farina, Mo., will catch him.

The Heman Construction Co., Title Guaranty Building, St. Louis, Mo., have eight miles of track laying in Southern Illinois to sublet.

County Superintendent of Highways, Thomas, at Belleville, Ill., received word that a contract for the construction of the first state aid road in St. Clair County, had been awarded to the Charles H. Degenhardt Company of Alton, on a bid of $19,976. John D. Vogt of Belleville, the only other bidder, asked $20,183.67. The road is between East St. Louis and Dupo, Ill.

A. A. Luck, of the Luck Construction Co., Kansas City, Mo., was in town the other day looking for a job for his 25-team outfit and a couple of draglines that they have idle. 524 Realton Bldg., Kansas City, Mo., will reach them.

Ward Bros., 1062 Earl Ave., Cleveland, Ohio, can use a 10 or 12-team outfit there. They also have some machine work to let at good prices.

Mike Conroy has finished his big team job at St. Catharines, Ontario, and is moving his outfit on to a two years' job in Rochester, N. Y.

Jas. T. McMahon was awarded the contract for grading the site for the new Pullman Company shops in Northern St. Louis. About 175,000 yards of earth to be moved.

Wm. C. Nuttal of M. C. Connors & Co. died in Chicago last week. From what we can learn he was ill only a few days.

J. C. Kaiser has moved his 20-team outfit from Charleston, Mo. to St. Louis. Working for the Hydraulic Pressed Brick Co., in the western part of the city.

Thos. L. Rosser, Jr., Earlham, Iowa, can use a couple of 10 or 12-team outfits at that point. He also has a bridge and pile-driving job in Illinois to sublet.

Roger Faubian of the J. W. McMurray Contracting Co., Kansas City, passed through St. Louis the other day on his way south to look over some bridge and concrete work. Roger informs us that McMurray has been under the weather lately spending a good deal of his time at Excelsior Springs, Mo.

Contractors when in want of labor or work for their outfits write Koenig's Labor Agency, 612 Walnut St., St. Louis, or 503 Delaware St., Kansas City, Mo.

Sealed proposals have been received at the office of the secretary, Mississippi River Commission, 1311 International Life Building, St. Louis, Mo., for constructing about 110,000 cubic yards of earthwork in the Riverland Levee District, Mo.

The Chicago, Burlington & Quincy R. R. did not let contract extending line from Mexico to Kansas City to MacArthur Bros. Co., 208 South La Salle St., Chicago, as was reported. Contemplated line will run from Mexico to Carrollton or Moberly, to get a Kansas City connection.

Montana

More Electrification on the Milwaukee is planned. In view of the unqualified success of electrification of nearly 400 miles of the company's road in Montana, estimates have been prepared for extension on 300 miles of trackage on two divisions, one about 100 miles and the other 200 miles. The chief merits of electric haulage compared with steam haulage were enumerated by one of the company's engineers at Butte, as follows: "Less than one-third as many locomotives are required. The electrical locomotive can run indefinitely without inspection while the flues of a steam locomotive must be overhauled after a 100 mile run. The cost of maintaining numerous terminals is abolished. Electric trains can handle heavier trains in faster time. This gives better service, gives opportunity to each train crew to do more and makes all handling costs cheaper. Water tanks and coal pockets must be maintained for the steam engines. These now are dispensed with. The thousands of cars necessary to haul the company coal now may be used for other purposes. The trouble and delay of having water tanks freeze in winter are ended. There is an enormous improvement in the service in the winter time. When it is cold, it is difficult to get up steam and to keep it up. All delays on the Milwaukee this year have been on other divisions than those electrified. Yet the electrified divisions are those where the steepest grades are encountered. The trains coast down grades without brakes, thereby regenerating electricity. Thousands of dollars in power are saved each month in this way. There are no scraping brakes to wake sleepers. There is no smoke. Train detentions are much less. Because bigger trains can be handled at a higher speed, a single track is sufficient for traffic which would require a double track on steam railways. No sparks drop from the locomotive to set fire to forests. This means a saving of thousands of dollars every year in fire claims." These satisfactory results in electrification of the steam railroad mean an added market for copper, both for transmission and for equipment.

New York

New York and Vicinity

BY H. GREY

The Volpe Contracting Company is using their 14-B Bucyrus steam shovel excavating a basement for a large apartment house. The job is located on 53d street and Fort Hamilton Ave., Brooklyn, N. Y. It consists of 9,000 yards. They load on an average of 260 two-yard wagons per day. Digging consists of ordinary earth with a large number of large rocks which are easily handled by the shovel. The dirt is dumped about one-half mile from the job. Jos. Marino is running and Louis Fallon is firing the shovel.

North Carolina

John C. Gray is waiting for a call to the levers of a Bucyrus shovel. Anywhere in the world will suit "Jack", as he is at home any place. He can be found by wire or letter at Wadesboro, North Carolina.

The Southern Ry. has let contracts for double-track work from Charlotte to Spartanburg, S. C., as follows: Charlotte to Belmont, N. C., 19.9 miles, awarded to Robert Russell of Charlotte; Belmont to Bessemer City, N. C., 16.8 miles, to the Crawford-Morrow Co., of Atlanta, Ga.; Bessemer City to Blacksburg, S. C., 18 miles, to C. W. Lane & Co. of Atlanta; Blacksburg to Gaffney, S. C., 9.6 miles, to the Brooks-Callaway Co., of Atlanta; Gaffney to Cowpens, S. C., 10.4 miles, to the Dunavant-Gunter Co. of Knoxville, Tenn.; Cowpens to Mt. Zion, S. C., 5.8 miles, to the Brooks-Callaway Co. On the Charlotte-Belmont section grading for double track has been completed on 1.9 miles north of Belmont; this includes the approaches to the new bridge over the Catawba river; only single track has been placed on the bridge, and this is now in service, although the masonry was constructed for double track. W. H. Wells, Washington, D. C., is chief engineer of construction.

Ohio

L. L. Whyte is now running the Bucyrus 70-C shovel at Lucasville, Ohio, for the Jones-Gray Company. They have a contract on the C. & O. N. work. Roscoe Black is cranesman and Jim Rose is fireman on this shovel.

Oregon

Prineville & Northern Ry. let contract for grading a line from Prineville to the main line of the Oregon Trunk R. R., 18½ miles, to E. T. & H. H. Johnson, Commercial Block, Portland, $53,000.

News from the Northwest

BY L. T. RUSSELL, PORTLAND

Martin Woldson has started his work in Montana between Bozeman and Logan; he will use three draglines on a part of it, two of the machines are Marions and one a Bucyrus class-14.

Swan Benson is now in Montana on the Great Northern work that is being done by Grant Smith & Company.

Porter Brothers, have landed some fairly good work lately, and are rather busy just now.

Robert Crowell, shovel operator for the O. W. R. & N. Co., was a recent caller at the Portland District Office.

A. J. Cook & Company are working on the excavation for the new Portland Post Office.

The Puyallup Dredging Company have finished their work near Tacoma, Washington, and the 20" dredge used on this job is being advertised for sale on April 23d by the Inter-County Commission.

Bids are opened at Astoria, Oregon, for high service reservoir gate house and some other work of a like nature. There will be about 160,000 cubic yards of excavation and about 50,000 cubic yards of rolled embankment. No award has been made as yet. Mr. Lars Besswick is engineer for the water commission.

All the earth movers in the Northwest who can do so, as well as some men in other lines of construction work are getting into the ship building game, and it promises to be a good thing, especially since the U. S. Government is coming into the market for from one to three thousand wooden vessels of about 3,000 tons each.

Panama Canal

The total excavation on the Panama Canal for February, including earth, rock and gravel, was 1,050,172 cubic yards. In addition 36,990 cubic yards were rehandled, and not credited to the Canal excavation.

In Gaillard Cut six dredges removed 181,077 cubic yards of earth and 578,513 cubic yards of rock, as follows: Rehandled material, not counted in the totals, amounted to 36,990 cubic yards. The Culebra slide showed a small but continued movement during February in the vicinity of stations 1770 1775 east. Other than this no signs of slide movement were apparent.

The total excavation by dredges during February was 1,050,172 cubic yards, of which 189,408 cubic yards were from auxiliary works and 860,764 cubic yards were from the Canal prism. Of the latter, 37,776 cubic yards were original construction excavation and 822,988 were in maintenance work. The estimated amount of dredging remaining in construction or original excavation in Canal and harbor work, exclusive of Gaillard Cut, on March 1, was 3,556,893 cubic yards.

Pennsylvania

Wilkesbarre and Vicinity

BY EDWARD GEORGE

The Delaware and Hudson has two model-60 shovels in coal piles at Olyphant and Parsons but they are not loading at present on account of the scarcity of cars. Edward George is in charge of both plants.

The Hudson Coal Co. has an 18-B Bucyrus mounted on caterpillars, stripping and loading coal, at East End, Wilkesbarre. They also have an 18-B at Greeb Ridge in a culm pile loading for a washery.

Sweeney Bros. of Scranton have an Erie shovel loading culm at Olyphant for a New York firm.

Porter Bros. have a model-76 Marion at Carbondale. They finished work with this shovel about the middle of April. They also have a model-76 at Altamont, New York, on the D. & H. reducing curves and grading. This job is in charge of W. J. Porter. The Carbondale is in charge of L. Randall.

Timothy Burke of Scranton has five Bucyrus 70's working on different strippings in the vicinity. Tom Harrington is superintendent.

K. Shupp has a Bucyrus 70 and a Marion model-60 stripping for the Hudson Coal Co. at Plymouth, Pa.

The Hudson Coal Co. has a Marion Model-90 loading coal that is being stripped at Plymouth.

Geo. F. Lee Coal Co. has a Model-60 stripping at Avondale.

O'Brian Bros. have a Thew model-0 on street work at Parsons. The Wilkesbarre Traction Co. is about to start their 14-B Bucyrus Electric shovel on the Harvey's Lake Short Line to clear a landslide.

Ham Sargent is about to start in the contracting business. We wish him the best of luck.

The Delaware & Hudson Co. has let contract for 400,000 cubic yards of steam-shovel excavation (coal stripping) at Moosic, to Dick & Co., of Hazelton.

Pittsburgh and Vicinity

BY F. A. RUMBARGER

The C. P. Mayer Brick Company, Bridgeville, Pa., who purchased a 225-B and 35-B Bucyrus shovels advise that these shovels are now being erected and will be used for stripping coal on a tract of land a short distance from the heart of Pittsburgh. Mr. C. P. Mayer, president of this company, hopes to be shipping coal within a short time. The coal is known as Pittsburgh No. 8 which is considered the best grade of coal in this vicinity.

The Miller Construction Company, Du Bois, Pa., are using Bucyrus 70-C shovels on three of their jobs for the B. R. & P. Railroad.

The Pittsburgh-Hanover Coal Company is building a right-of-way into their coal stripping operations near Hanlin Station, Pa. They will use Marion coal-stripping shovels on this operation.

Harry Patterson is now in charge of the Wayne Coal Company's stripping operations at Parlett, Ohio.

McCrady Brothers, contractors, Pittsburgh, Pa., are using two Erie B shovels in excavating foundation for the rebuilding of the American Switch & Signal Company's plant which was burned to the ground several months ago.

Thomas Connor, contractor, Greensburg, Pa., reports that his tunnel jobs at Overbrook, Pa. and Hagerstown, Md. are rapidly nearing completion. Mr. Connor at present is not working his big railroad outfit, but expects to have it all in operation in the very near future.

It is reported that the B. & L. E. Railroad are going to build six additional miles of track near Harmarville, Pa.

Earl Brubaker is working on his contract for stripping coal near Pittsburgh, Pa. The stripping averages about 15 feet and he is using a Thew A-1 revolving shovel which is equipped with direct thrust engines, also long dipper sticks. The outfit is doing very credible work.

It is reported that State Highway Commissioner Black has asked for bids for the construction of the following vitrified block pavements:

14,128 lineal feet in Clarion and Paint Townships, Clarion County. This is State Highway Route No. 65.

32,923 lineal feet in Jackson and East Taylor Townships, Cambria County. State Highway Route No. 52.

36,170 lineal feet in Cecil and North Strabane Townships, Washington County, and South Fayette Townships, Allegheny County.

All of the above bids will be opened at State Highway Department on May 3.

South Carolina

Joe Reams is operating a shovel on the Southern Ry. work near Westminster.

Virginia

A. F. May, craneman, is still on Boxley's work near Elmington. "Buck" sure loves to "boom-cat" a Bucyrus.

Wyoming

North Platte News

BY MRS. F. A. MENGEL

Winston Camp

The class-24 Bucyrus dragline began operation on the Winston Brothers contract on April 2. This machine has been delayed considerably by bad weather. At present they are running only one shovel. F. A. Mengel is operator, and John Mortinson is firing.

The class-20 dragline is making much better speed at the present time, as they are working two shifts. The operators are Ray Adams and L. W. Allison.

The grading machine on this project is now being handled by means of the big new gasoline tractor. This has proved a wonderful success.

L. W. Allison who was formerly with McArthur Bros. is now operating for Winston Bros.

"Wedding bells in Camp Two." Mr. Howard Mann, who is fireman of Camp Two has returned to his duties. He brought with him a charming young bride. Mrs. Mann is a charming young lady and we all welcome her to our camp. She was formerly Miss Hazel Horton of Minneapolis. Mr. and Mrs. Mann are happily situated in a cozy little cabin in Camp Two, which Mr. Mann had in readiness for his bride.

Mrs. F. A. Mengel enjoyed a week end in Denver, Colorado, recently.

Hilton's Camp

Mr. J. E. Hilton is in Montana on business.

Mrs. Harvey Slack will leave soon for Montana, where she will remain until their work here is completed.

Knowlton's Camp

Mrs. Stevenson has been seriously ill for the past month, but she is now enjoying camp life again.

The United States Reclamation Service at Fort Laramie has let contract for earthwork and structures, Fort Laramie Canal, North Platte Irrigation Project, Nebraska-Wyoming. Schedules 1, 2, 3, 4, and 6, to Winston Bros. Co., 802 Globe Bldg., Minneapolis, $217,845; Schedules 5 and 7 to MacArthur Bros. Co., 120 Broadway, New York, $243,000.

Our good friend, Mrs. F. A. Mengel, during her recent visit to Denver, took an examination as a Red Cross nurse, and as we might expect, passed successfully. She expects to be called into service any time. It may be that we are violating a confidence by mentioning this fact, but our pride in her splendid patriotism has got the upper hand over any other feeling. It is this kind of spirit that wins wars!

PROSPECTIVE CONSTRUCTION

Alabama

Southern Railway System has let contract for double tracking work on Alabama Great Southern Ry. (branch of Southern Railway System) from Tannehill (P. O. Green Pond) to M. M. Elkan, Macon, Ga.

It is being planned by Northern Alabama Traction Co., W. R. Spear, supt. and pur. agt., 2d Ave., New Decatur, to construct an interurban line from Florence to Huntsville, a distance of about 20 miles.

Arizona

Work of constructing three concrete dams and hydro-electric plants in the Grand Canyon will be commenced in the near future, according to J. B. Girard, Phoenix engineer for the project. The first dam will be constructed about 21 miles north of Peach Springs at a point where the walls of the canyon rise 1,500 feet above the stream. It will be necessary to construct a spur track from the Santa Fe at Peach Springs to the site, or to construct a highway to allow the use of motor trucks. Power generated by this plant, when completed, will be used in constructing the other two. The Clark Engineering Co. of New York City has a man on the site checking up plans and making estimates.

J. W. Miller, president of Drainage District No. 1, Tempe, Ariz., states that there is a movement on foot to form another drainage district and vote bonds for a drainage system connecting with the one now nearing completion, the new canals to carry the water in an opposite direction. There would be about 50,000 cubic yards of excavation involved. The project has not reached a definite stage.

Arizona Extension R. R. has been granted permission by State Corporation Commission to issue $4,000,000 stock and $4,000,000 in bonds to build a line from Clarkdale to Mesa, 160 miles. J. S. Douglas, Jerome, president.

Arkansas

It is intended by County Commissioners, C. Young, county clerk, to construct 21 miles of roads between Jasper and Harrison.

It has been decided by Commissioners' Court to construct a road along the Arkansas state line from Texarkana to Red River, near Indes, about 10 miles. Cost about $30,000.

Work will be rushed as fast as possible for the construction of the Fort Smith, Subiaco & Eastern Ry., which is being built from Scranton to Dardanelle, a distance of 26 miles. W. L. Ruhle, Chief Engineer, Fort Smith.

California

It is being planned by the Board of Supervisors to build a 50-mile road of asphalt macadam from Niland to Calexico and from El Centro to Holtville.

Col. W. H. Holabird, engineer, 318 Land Title Building, Los Angeles; F. H. Merrill, and W. B. Baker, 911 Brockman Building, and others are planning to bring water from Whitewater River and other streams in San Jacinto Mountains into Coachella Valley for irrigation, and into Imperial Valley for domestic use. They have also made surveys for dam in Morongo Valley to impound 109,000 acre-feet and an open concrete and covered pipe canal 165 miles long, with hydro-electric plants along line for developing 40,000 horse power; cost $10,800,000.

The San Dieguito Mutual Water Co., San Diego, has been incorporated with a capital stock of $3,000,000 and will build two big concrete dams, one on the Carroll dam site on the San Ysabel river and the other on the San Dieguito dam site. The company will put under irrigation about 20,000 acres in San Diego county. Contracts for the dams will be let in about 30 days, it is expected. The directors of the new organization are W. E. Hodges, vice-president of the Santa Fe; E. O. Faulkner, manager of the oil and timber department of the Santa Fe.; William G. Menshaw of Oakland; Col. Edward Fletcher of San Diego, and S. S. Payson, general agent of the Santa Fe at San Diego.

District of Columbia

An appropriation of $10,000,000 has been agreed upon by the United States Senate to carry on the next year's work on the Mississippi River.

Foreign

Chile

There is a good prospect for the following irrigation work in the near future:

The Bio Canal, 40 miles long, estimated to cost $330,000 to $440,000; River Maule Canal, 200 kilometers long, to supply water to 40,000 hectares, estimated to cost $8,943,942; Melado

Canal, 70 kilometers long, to irrigate 27,000 hectares, estimates being prepared; El Laja Canal, to irrigate 50,000 hectares. Studies have been made for the damming of the lake in the River Turbio Coquimbo, at a cost of $328,000, to hold 42,000,000 cubic meters of water, sufficient to irrigate the whole valley.

[1 kilometer=0.621 mile; 1 hectare=2.47 acres; 1 cubic meter of water=1,000 liters=264 gallons.]

Georgia

It is probable that the Ocilla Southern R. R., J. F. Gray, general manager, Ocilla, Ga., will extend its line to Macon, a distance of about 28 miles.

Idaho

R. S. McCrea, county clerk, will furnish further information regarding plans for constructing a 15-mile road and surfacing 10 miles with gravel.

Iowa

Surveys have been completed for the straightening and improving of Silver Creek Channel in Mills County. The proposed ditch will be 8 miles in length, requiring about 547,000 cubic yards of earth excavation. Bids will probably be asked about July 1. Seth Dean, Engineer, Glenwood, Iowa.

Illinois

Sealed proposals will be received at the office of the Secretary, Mississippi River Commission, 1311 International Life Building, St. Louis, Mo., until 11 A. M., May 14, 1917, for constructing about 259,100 cubic yards of earthwork in the Sny Island Levee Drainage District, Ill.; and until May 18, for constructing about 100,000 cubic yards of earthwork in the Hunt Drainage District, Ill. Further information on application.

The Illinois Central R. R. plans a line from Effingham to Golconda and Burlington Bridge, Metropolis. A. S. Baldwin, 135 East 11th Pl., Chicago, chief engineer.

Kentucky

J. E. Johnson, engineer of Paducah, will let contract the latter part of May for constructing about 400,000 cubic yards of excavation and constructing several bridges on Mayfield Drainage District. Cost about $302,980.

The Louisville & Nashville R. R. made surveys for a 10-mile branch line from Hazard up Lotts Creek to develop coal lands. W. H. Courtenay, Louisville, chief engineer.

It is being planned by Louisville & Nashville R. R. Co., H. C. Williams, chief engineer, Louisville, Ky., to construct a 2-mile line from Chavlies to coal mines of Crevona Coal Co.

Maryland

It is being planned by Ocean City & Fenwick Ry., C. E. Shute, secretary, Ocean City, Md., to construct trolley line between Ocean City and Fenwick Island, a distance of about 11 miles.

It is being planned by Baltimore & Ohio R.R., R. N. Begien, chief engineer, Baltimore, Md., to construct branch line from Baltimore to Sparrows Point, distance about 8 miles.

The Western Maryland Ry. is making surveys for relocating portions of their road from Baltimore to Cumberland, also additional tracks and double tracks between Highfield and Pen Mar, Highfield P. O. H. R. Pratt, Continental Trust Bldg., Baltimore, chief engineer.

Michigan

Pennsylvania R. R. Co., A. C. Shand, chief engineer, Philadelphia, will probably receive bids within 60 days for constructing line running from Carleton, near Monroe, to city limits of Detroit.

Mexico

Rapid and immediate extension of railroads in Mexico is projected by the department of communications and public works in conjunction with the various state governments. Arrangements already have been begun to complete the line from Santa Lucretia, on the isthmus of Tehuantepec line, to Merida, Yucatan. This line, when completed, will form the connecting link in the north and south route from Ciudad Juarez, on the American border, to Merida. It will run through San Juan Bautista in Tabasco and Campeche. The state of Yucatan, one of the most prosperous in the republic, will finance the new line with electric lines connecting with it. This right of way formerly was controlled by a concession to foreign capital, but was declared forfeited.

Another projected line will connect the Atlantic and Pacific coasts of Mexico west from Tampico, the main Atlantic oil port, to San Blas, State of Nayrit. This route will link up Aguas Calientes, Zacatecas and other important cities with the line of the Southern Pacific of Mexico, which now has extended its line from Nogales to Compostela, south of Tepic.

Notice has been given to the Southern Pacific Company that it must continue its line from Compostela to Guadalajara, according to its concession, and begin this work of construction at once, or the concession will be declared void. The distance involved is not great, but construction involves several complicated engineering problems, including two long tunnels through the mountains.

Mississippi

Surveys are being made for constructing about 18 miles of railroad from Paulding to Steven, to connect with the Gulf, Mobile & Chicago. The line will be constructed by G. W. Foulke Lumber Co.

Montana

It is being planned by Minneapolis, St. Paul & Sault Ste. Marie Ry., C. N. Kalk, chief engineer, 317 2d Ave., Minneapolis, Minn., to extend line from Whitetail, Mont., to Coutts, Alberta, Canada.

Nebraska

Chicago, Burlington & Quincy R. R. will double track line from Waverly to Ashland, Nebraska, and take out a big bend in the road near Ashland; also cut directly across Salt Creek bottom taking out a big curve and giving the road more direct entrance into the yards there. A. W. Newton, chief engineer, 547 West Jackson Blvd., Chicago, Ill.

New Jersey

It is being planned by the State Highway Commission, Trenton, to construct 56 miles of roads in Atlantic County. Cost about $1,400,000.

New York

R. H. Gillett and W. H. Schott, both of Albany, are reported interested in a project to build a railroad from Albany to Pittsfield, Mass., 37½ miles. Cost about $1,000,000.

It is being planned by the Board of Supervisors at Geneseo, N. Y., to construct 10 or 12 miles of road. It will include Dansville-Conesus and Geneseo-Lakeville road, Short Tract-Portage, Groveland Station-Groveland-Hunts Corners and Tuscarora-Barrons Corners highways.

Ohio

It is being planned by Cleveland, Cincinnati, Chicago & St. Louis Ry., C. A. Paquette, chief engineer, Cincinnati, Ohio, to double track roadway from Marion to Bellefontaine.

Oregon

Klamath Irrigation District applied to State Engineer for permission to divert 280 cubic feet per second of waters of Klamath River for irrigation of 27,983 acres of land near Lower Klamath Lake, Klamath County. Will reclaim land by levees to be built along the banks of the proposed canal. Cost, about $40,000.

It is being planned by Hill Railway System, J. W. Williams, Phelan Bldg., San Francisco, Cal., chief engineer of construction, to construct a railway from Bend to Trinidad, Cal., to connect with Northwestern Pacific R. R.

Pennsylvania

It is being planned by Pennsylvania R. R. Co., A. C. Shand, chief engineer, Broad St. Station, Philadelphia, to build a cut-off from a point above Natroma to Glassmere along the Allegheny river, double track, about 5 miles.

South Carolina

It is intended by County Highway Commission at McCormick, J. L. Kennedy, secretary, to construct 150 miles of permanent public highways. Cost about $176,000.

Tennessee

Greene County Pike Commissioners at Greenville, propose to begin construction of 165 miles of water-bound macadam roads in Greene County as soon as bonds are disposed of, involving about 412,000 cubic yards of excavation, to cost $510,000. C. E. Coile, engineer, Greenville, Tenn.

Bids will be received after April 30 by Washington County Good Roads Commission, E. J. Baxter, secretary, Jonesboro, Tenn., for constructing about 250 miles of 10, 14 and 15-foot macadam roads in Washington County.

It is being planned by Illinois Central R. R. and Yazoo & Mississippi Valley R. R., A. S. Baldwin, 135 E. 11th Pl., Chicago, Ill., chief engineer, to spend about $10,000,000 during summer to repair main lines in Tennessee and other southern states.

It is being contemplated by the County Commissioners to construct or repair 64 roads at a cost of over $350,000 at Athens.

T. C. McEwen, engineer, Centerville, Tenn., is asking for bids for constructing about 40 miles of clay road. Will require about 220,000 cubic yards of excavation and cost about $225,000.

Texas

The Cameron County Irrigation District No. 2 will on May first, let a contract for one-half million cubic yards of excavation on 8 miles of main canal. Perry A. Wetty, of San Bento, is engineer and superintendent.

Harris County is contemplating a bond issue of $1,000,000 with which to rebuild 230 miles of main roadways in the county with either tar or concrete paving. Chester H. Bryan, County Judge.

Plans are being made for the construction of 100 miles of gravel roads in Lee County, District No. 1. John H. Tate, County Judge, Giddings.

Virginia

The Norfolk & Portsmouth Belt Line R. R. plans to extend its line from South Norfolk across eastern branch of Elizabeth River through Norfolk County to a point near Elizabeth River and property of Virginia Terminal Co., G. S. Shafer, Port Norfolk, superintendent.

Washington

It is intended by County Commissioners, W. C. Bickford, county engineer, to construct 57 miles of highways at a cost of about $800,000.

Port Angeles & Grays Harbor Ry. are making surveys for a 130-mile line from Port Angeles to Grays Harbor including grading and bridge work. Company may receive bids during the next three months. About $4,500,000 or $5,000,000. J. W. Lindsay, Port Angeles, interested.

West Virginia

All bids were rejected and work will be readvertised later for improvement of James River and Kanawha Turnpike in Sewell Mountain District, Fayette County; 7.8 and 6.4 miles respectively. R. J. Stegall, Clerk, County Court, Fayetteville.

Chamber of Commerce, Bluefield, W. Va., is reported interested in plans for an electric railway from Graham to Welch, W. Va. 53 miles, via Pocahontas, Boissevain and North Fork, Va., and Bramwell, Keystone and Gary, W. Va. L. H. Duncan, secretary.

Wisconsin

Green Bay & Eastern Ry. received certificate of convenience and necessity from Wisconsin Railroad Commission, for proposed line built from Green Bay to Manitowoc and Sheboygan to be built early this summer. W. M. Willinger, Manitowoc, president.

REVIEW OF BOOKS and CATALOGS

We shall be glad to review, in this column, such books and catalogs as are sent to us. Books reviewed in these columns will be supplied by The Excavating Engineer Publishing Company at the price named.

HANDBOOK OF ROCK EXCAVATION: METHODS AND COSTS

By Halbert Powers Gillette. 830 pages, pocket size, cloth bound, thoroughly illustrated

As contractors and engineers know, Mr. Gillette is the author of a number of valuable handbooks on cost data, earth and rock excavation, etc. This book contains some of the material which Mr. Gillette published about twelve years ago in a book with a similar title. The subject is greatly amplified. The book is divided into eighteen chapters with 184 illustrations and many tables. Six chapters are devoted to drills and drilling, three to explosives and blasting, one deals with loading and transportation, and goes into some detail in the cost of hauling, and handling dump cars, wagons, traction engines, etc. Still another chapter is devoted to quarrying and others to open cut excavation in quarries, pits and mines, railroad cut excavation, canal excavation, trench work, while the final chapter is devoted to subaqueous rock work. This book is not only recommended as very practical for engineers and contractors, but may be used as a text book. The book is without question the most thorough and up to date yet published on the subject. Price $5.00.

Clark Book Co., Inc., New York, N. Y.

BYERS AUTO-CRANE BULLETIN:—8½" x 11", 12 pages, describing model-C, 1917 model, auto-crane. This crane is said to be a cross between a locomotive, crane and a motor truck. It is a small, compact, high-powered steel derrick that travels readily on the ground to any place it is needed. The bulletin is profusely illustrated with photographs of the machinery and various parts of the crane and also of the crane in operation under various conditions. Among the many uses for this crane illustrated in this bulletin, are the following: Loading stone to motor trucks in a quarry, handling skips, unloading slag or gravel from railroad cars, road work, loading steel shavings or coal into gondola cars, digging foundations, stripping overburden from gravel pit, charging a mixer on street paving work, back-filling and driving piles on bridge work, digging drainage ditches, etc. The bulletin also contains full specifications.

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TRADE NOTES

The John A. Roebling's Sons Co., of Chicago, have announced the death of their Secretary and Treasurer, Ferdinand W. Roebling, which occurred on Friday, March 16.

W. F. Schaphorst, who will doubtless be well known by Excavating Engineer subscribers as a frequent contributor, announces that he has started a technical advertising agency with offices in the Woolworth Building, New York City. Mr. Schaphorst is a graduate mechanical engineer, with six years of experience with an engineering advertising agency in New York. He has had considerable experience writing copy of such products as steel piling, raw hide, metal gears, hydraulic machinery, storage batteries and all kinds of power plant appliances. He is well known as the author of many articles in leading trade journals. Before engaging in advertising work he taught mechanical and steam engineering in two Western colleges. His work will include complete advertising campaigns, preparing copy, reading proofs, checking bills, planning and writing catalogues, letters, folders, etc. His object will be to relieve the busy official of small, tedious and time-consuming details.

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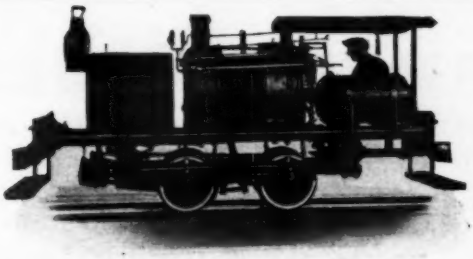
Because he smells defeat!



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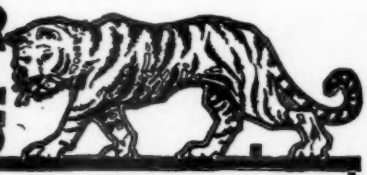

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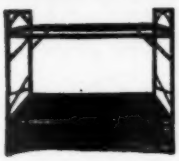

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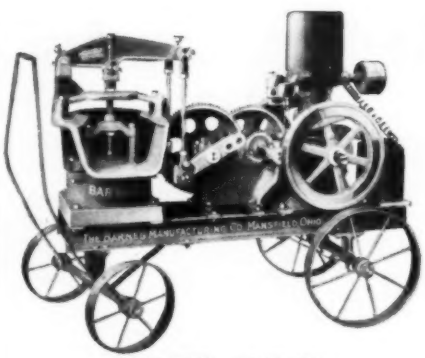

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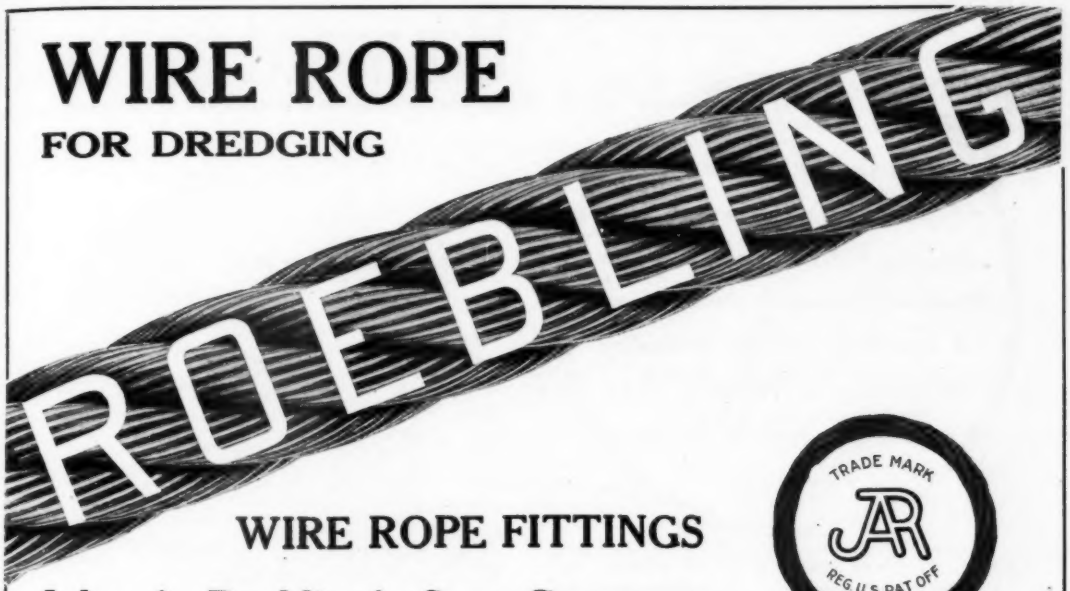

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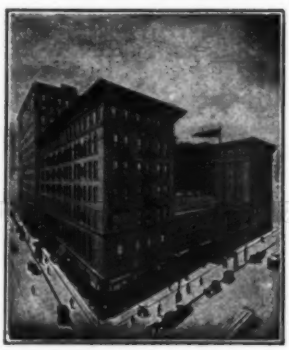

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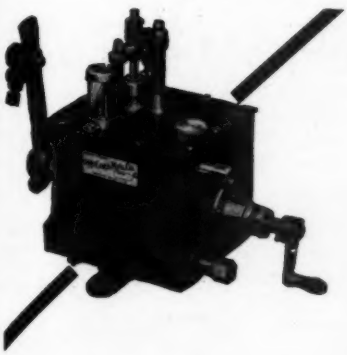

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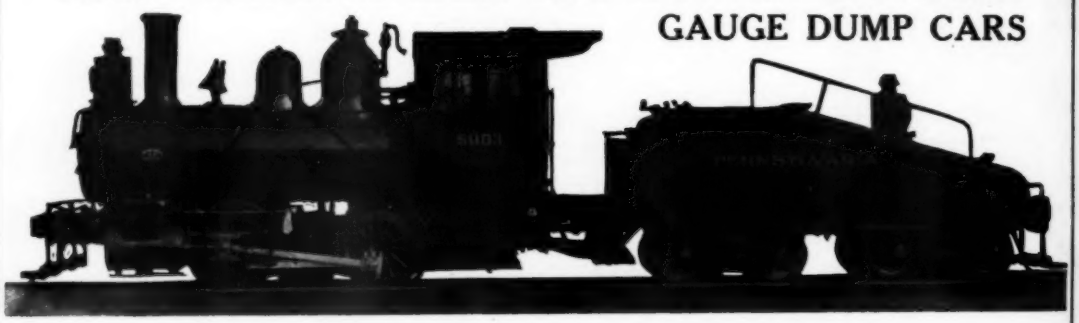

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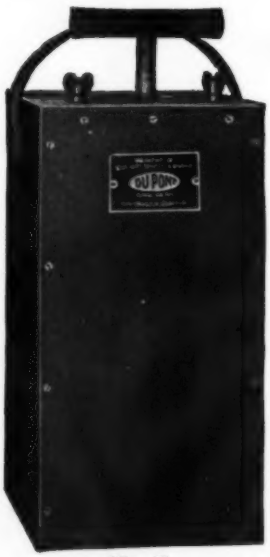

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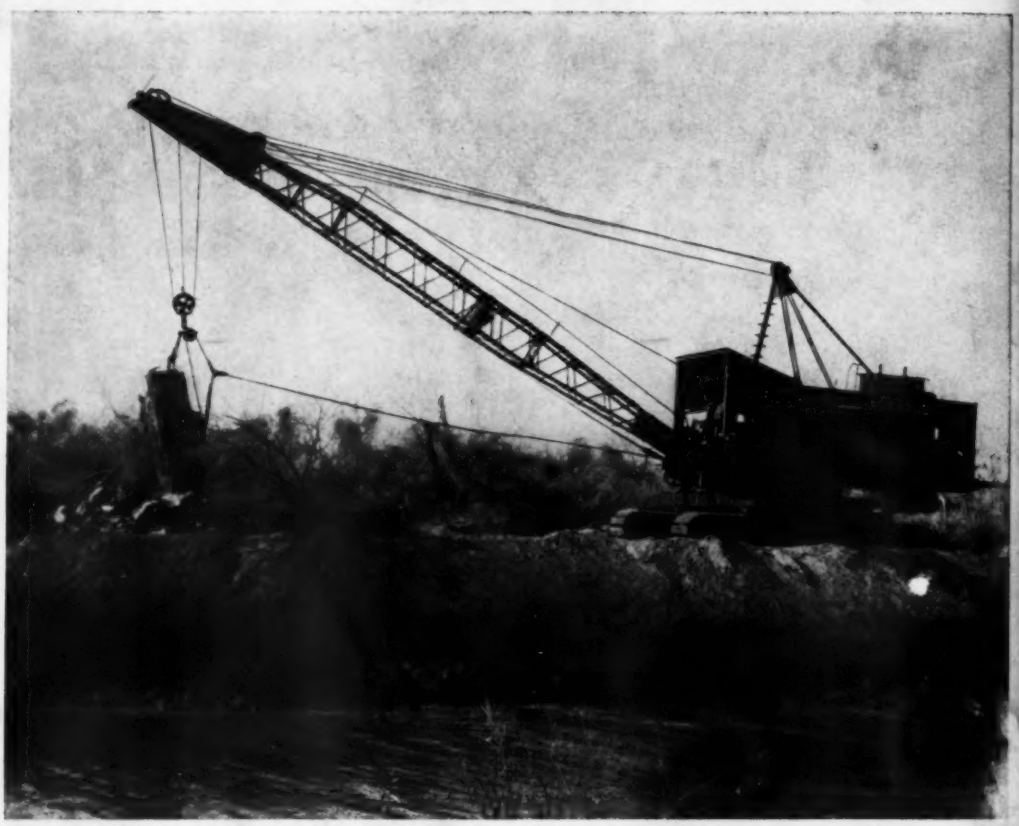

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